Resilience Dialogues

Final Synthesis Report
Hallandale Beach, FL

March 2017

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Resilience Dialogues Final Synthesis Report

Hallandale Beach, Florida

Introduction

This report captures the key outcomes from the Hallandale Beach, FL Resilience Dialogues process, which took place between March 6 and March 31, 2017. The Resilience Dialogues partners with communities to explore their risks from climate variability and change. Using a professionally facilitated, online process to connect community leaders to a network of vetted national experts, the Resilience Dialogues helps them work together to understand risks and lay the groundwork for long-term resilience. The service connects communities with the most appropriate resources, whether from Federal agencies, regional networks, or the private sector. The Resilience Dialogues builds on recent Federal efforts, such as the Partnership for Resilience & Preparedness, the Climate Data Initiative, the Climate Resilience Toolkit, and the National Climate Assessment. It also leverages nonprofit programs, including the Thriving Earth Exchange and the Community and Regional Resilience Institute. This report captures the following outcomes from the Hallandale Beach Resilience Dialogues process:

- List of key questions that Hallandale Beach community leaders are now asking, regarding how to proceed with long-term climate resilience planning;
- Highlights of the exchanges between community leaders and subject matter experts (SMEs) over the course of the Resilience Dialogues;
- Annotated list of tools, resources, data sources, and technical assistance programs that could help community leaders answer their key questions;
- Dialogue participant list; and
- Next steps for the community leaders to consider

Framing Dialogue: List of Key Questions

An initial list of concerns Hallandale Beach leaders developed in advance of the Resilience Dialogues served as the starting point for the development of the list below. The list presented reflects a number of refinements and additions derived from the exchange between community leaders and SMEs during the course of the dialogue. In particular, Hallandale Beach is interested in better understanding what the risks associated with sea-level rise (SLR) may be for their community, how to communicate with and convey these risks to stakeholders (including local residents), how to address beach erosion and saltwater intrusion, and how to finance future resiliency efforts.

Sea-Level Rise: Impacts, Vulnerabilities, Asset Protection, and Emergency Planning

1) What are the SLR projections for Hallandale Beach?
2) Which mapping and visualization tools will best help the City identify hazards, risks and vulnerabilities as it begins its resiliency planning? Which available decision support tools would be most useful for Hallandale Beach?
3) How might climate risk and the threat to critical assets change over time? How can the community best prepare for future risks while still dealing with daily functions?

4) What adaptive measures should Hallandale Beach consider to protect critical assets such as freshwater wells, beaches, and housing stock so that they are more resilient to flooding, high waves, and other impacts of SLR?

5) Are there county-wide or regional strategies to protect local beaches that are prone to erosion? Can Hallandale Beach coordinate with the County or the region to mitigate *unseen* impacts such as saltwater intrusion?

6) How can Hallandale Beach leverage existing relationships with the County and the SE Florida Regional Climate Change Compact to ensure their emergency management and resiliency efforts are aligned with other at-risk coastal communities?

Communicating Risk: Stakeholder Engagement, Public Outreach, and Education

7) What best practices and lessons from other cities can be applied in Hallandale Beach to effectively engage residents and key stakeholders in complex climate change issues?

8) What strategies can the City use to frame sea-level rise adaptation efforts more positively? What are effective strategies for involving the public in the adaptation-related decision-making process from the beginning?

9) Are there best practices or innovative methods for communicating with residents and stakeholders who may be skeptical or do not have basic knowledge of climate science? Are there available tools for planning and facilitating effective community meetings that pertain to climate, sustainability, community resilience and other related issues?

Financing Climate Adaptation and the Economic Costs and Benefits

10) What are the costs and benefits of early adaptation? What is the appropriate planning horizon for investing in adaptation? What steps can Hallandale Beach take to begin applying a resilience lens to all future budgetary decisions?

11) What are the financial mechanisms by which smaller cities like Hallandale Beach can establish an emergency reserve account that makes funds available for use immediately following an extreme event?

12) What national funding is available to local governments for resiliency efforts?

13) Can Hallandale Beach benefit from grants and funding through its association or collaboration with the County or with the SE Florida Compact?

14) What kinds of financing mechanisms can Hallandale Beach leverage for low-impact development and stormwater management projects?

15) What tools or methods could Hallandale Beach use to assess the potential effectiveness (cost and risk reduction) of different adaptation strategies or resilience investments, recognizing that retreat might be considered an option in coastal areas?

Social Impacts: Displacement, Vulnerable Populations

16) How do demographics – ranging from housing ownership, types of households, income level, ethnicity, household language spoken, to age – intersect with climate risk in coastal communities?

17) What can the City do to mitigate the impacts of hotter temperatures and other risks on its vulnerable populations?

18) Are there policy mechanisms that can encourage the development of affordable housing options in higher elevations, particularly as construction and development increase inland? How can the City ensure that new, affordable housing structures are built to safe elevations or are retrofitted to meet FEMA's minimum requirements?

19) Are there financial mechanisms that can ensure the costs of maintaining services in flood-prone regions are borne by those who choose to live there and not subsidized by other residents? If so, can the City avoid penalizing impoverished residents who cannot afford to retrofit or relocate? Is it worth investing in reinforcements and other adaptation strategies in high-risk flood zones?

20) Can the City incentivize home owners to make adaptive changes to their units – changes that may require investments but may not be mandated under current rental laws? Would incentives need to be designed differently to engage and motivate rental property owners?

Barriers to Adaptation

21) How can the City overcome Florida's regulatory barriers that prevent local governments from enacting pro-resilience or pro-sustainability regulations?

22) How can the City encourage living shorelines if many residents are wary of the restrictions on cutting or trimming mangroves?

Dialogue Highlights

The following bullets highlight key points and information shared over the course of the Hallandale Beach Resilience Dialogues process:

Sea-Level Rise: Impacts, Vulnerabilities, Asset Protection, and Emergency Planning

- **Potential SLR Impacts can be categorized as:**

  1. Infrastructural (transportation, water/wastewater, energy, telecommunications)
  2. Built Environment-related (homes, businesses, waste collection/disposal)
  3. Social and Economic (insurance, mortgages, education, recreation, tourism and other industries)
  4. Environmental (wetlands, habitat, water quality, urban landscaping/trees, parks)
  5. Cultural and Historic (community centers, libraries, museums, historical sites)

- **Some damaging components of SLR in Hallandale Beach are *seen* (flooding, beach erosion, as well as naturally occurring events that are exacerbated by SLR such as king tides, storm surge, and waves), while others remain *unseen* (salt water intrusion).** Some impacts of SLR cause direct damage, and others have secondary or indirect effects. Mapping the impacts of SLR in Hallandale Beach may be helpful in understanding the connections between social vulnerabilities (age, race, primary language, income level, etc.) and expected SLR impacts.

- **There are five projected impacts of saltwater intrusion that are relevant to this community:**

  1. Contamination of fresh water wells
  2. Elevation of water table and ground saturation
  3. Elevation of water table leading to failure of septic systems
  4. Structural damage to buildings (steel reinforcements, concrete foundations)
  5. Loss of certain types of vegetation and landscaping

- **One initial step in the vulnerability assessment is to examine FEMA flood maps.** 1% and 2% flood zones are the lowest elevations of the community. These lowest areas and older, historic buildings that were constructed prior to FEMA's flood map minimum elevation requirements are the most likely to experience impacts of SLR such as salt water intrusion.
- **Vulnerability will also depend on <u>absolute</u> factors that the community has limited control over, such as the City's geographic location and the rate of relative sea-level rise; <u>relative</u> vulnerability depends on factors such as geology, and the location of critical infrastructure.** However, vulnerability is not entirely static – hazards can be mitigated and communities can adapt and become more resilient.
- **The City's ability to make changes in zoning requirements, nourish beaches, restore natural habitats, and elevate or harden some building structures can be assessed and mapped out.** Some of these decisions can be made at the local level, but others may require alignment at the county, regional, or state level.
  The following related elements are dynamic and can change over time:

  1. Exposure to climate change and variability, over which the community has little control
  2. System sensitivity to variability and change (vulnerable populations, geology, building structure)
  3. Adaptive capacity and opportunities to reduce risk through financing mechanisms, governance structure, and communicating risk with the community)

- **There are interdependencies between Hallandale Beach and the surrounding jurisdictions at the county and state level which should be considered before conducting a vulnerability assessment.** For example, some roadways or infrastructure servicing Hallandale Beach may belong to the State.
- **<u>Social vulnerabilities in Hallandale Beach can be influenced by some of the following factors</u>:**

  1. Economic development and its distribution
  2. Access to resources
  3. Social capital (community cohesion and social networks)
  4. Quality of governance and institutions

- **A regional approach to addressing the impacts of a rise in the groundwater table is the most appropriate course of action.** Based on recent simulations by USGS, the groundwater table is expected to rise across much of the city to match sea level.
  Current and potential impacts include:

  1. Reduced soil storage capacity to 3 to 4 feet or less in some areas
  2. Saltwater has intruded the aquifer over 2.5 miles inland from the coast, adjacent to two city wells
  3. The Storm Tide Atlas from the South Florida Regional Planning Council shows that a category 5 hurricane surge would impact areas as far west as I-95
  4. Category 4 impacts would be felt west of the Intracoastal Waterway
  5. Category 1 and 2 surge impacts would primarily affect the barrier island and properties along the Intracoastal.

- **Undertaking a historic building survey and creating an inventory of all assets could allow the**

City to understand where financial strain may occur.

- **Crowdsourcing community input on the assets they feel are the most valuable could avoid conflict during planning stages.** Some community members may question why one particular asset is being protected at the cost of another.

Communicating Risk: Stakeholder Engagement, Public Outreach, and Education

- **Due to residents' and other local stakeholders' varying perceptions of SLR risks, public education is often better received when it is conducted in plain language with an emphasis on positivity.** Presentations should include visuals, timelines for implementation, costs, and projected benefits over time. Engaging the public in the issues as well as creating a sense of ownership around resilience projects will allow community members to feel they play a significant role in this effort.

- **Public meetings can present short-term solutions, case studies, and examples drawn from other cities.** The Compact and Broward County are cooperating and sharing lessons learned from other coastal communities facing similar issues.

- **Begin building trust with the community by starting meetings and discussions with issues that are particularly relevant to local residents.** From this familiar starting point, Hallandale Beach's leaders can transition into topics that may be more pressing for the City, but less familiar to residents.

- **Encouraging coalition-building and citizen task forces could help the City identify local experts and build alliances with beach property owners associations, and other citizens groups.** Outreach may reveal other local residents who either are doing existing work that coincides with the City's community resilience initiatives or have time and motivation to do so.

- **Identifying Hallandale Beach's "trusted messengers," such as industry leaders, local celebrities, or spiritual leaders can help spread the word about climate impacts and community-based resilience.** Additionally, identifying community assets (historic buildings, local sports team, schools, etc.) and developing a narrative around the potential impacts on these beloved entities may change hearts and minds.

- **Engaging with the public through art projects, visual representations of SLR, and interactive displays or maps can spark discussion and raise public awareness of these issues.** They can serve as daily, visual reminders of potentially *unseen* or long-term impacts.

- **Younger generations have expressed a desire to use available technology to address resilience issues and create more peer-to-peer communication forums**. Using more innovative methods to engage youth and citizen scientists through phone and computer applications and/or the crowd-sourcing of data may resonate with this demographic.

- **Addressing the emotional aspect of climate issues is critical: acknowledging the fear, anxiety, and remorse will collectively increase Hallandale Beach's ability to face and overcome this current challenge.** Through dialogue, dance, art, humor and storytelling, community members can share their feelings on climate issues, feel more empowered, and perhaps be more likely to engage in resilience-building.

Financing Climate Adaptation and the Economic Costs and Benefits

- **Many infrastructure needs require substantial investment.** One way to approach this is by applying a resilience lens to all future budgetary decisions.

![Resilience Dialogues]

- **Hallandale Beach could consider creating a reserve account to amass emergency funds to be used in post-disaster recovery.** This would provide rapid access to funding and get resources in place quickly to prevent further loss.

- **The County conducted a preliminary analysis of the benefits of flood-proofing and adapting to SLR and tidal flooding; it determined that the benefits far outweigh the costs.** Relocation programs often cost more than the benefits associated with avoiding future risk. The County is working on a series of future flood conditions maps for groundwater to help engineers plan ahead.

- **Globally, Swiss Re has projected that 40% of expected losses from climate change can be averted cost-effectively.** Losses are projected to grow from $17B in 2008 to $38-46B by 2030.

- **In coastal Louisiana, adaptation and flood hazard mitigation have been show to save $4 of disaster recovery costs for every $1 spent on elevation or flood-proofing.** Early action and proactive measures are more cost-effective as compared to reactive measures.

- <u>**Some financing mechanisms that may be applicable to Hallandale Beach include:**</u>

    o Public-private partnerships – in Atlanta and Tallahassee, there are examples of corporations financing green infrastructure water storage parks adjacent to their buildings in exchange for increased density and zoning allowances.

    o Grants – Broward County offers grants to private property owners and municipalities to build dunes along the barrier island. NOAA and NFWF offer grants for habitat restoration and living shorelines. The County is currently pursuing a grant and looking for locations for an alternative seawall that incorporates vegetation and habitat in its design. Grant funding is also provided to support local mitigation strategies.

    o Taxes and Fees – In Atlanta, a utility-funded green infrastructure program generates funding via fees for projects to comply and monitor compliance with new ordinances. Palm Beach County has instituted a Penny Sales Tax to fund infrastructure improvements across its cities.

    o Loans – New Jersey has established an Environmental Infrastructure Trust to provide low interest loans to cities. Broward County has a Property Assessed Clean Energy Program to support energy improvements. Flood-proofing may become part of this program in the future.

Social Impacts: Displacement, Vulnerable Populations

- **Adaptation and resilience planning must avoid re-entrenching socioeconomic inequities.** This is particularly relevant when property values and insurance costs are involved.

- **Hallandale Beach's Development Services and Human Services Departments can begin thinking about how to advocate for affordable housing in coastal communities that are built or retrofitted for FEMA flood map requirements.**

- **Some populations such as the elderly are more vulnerable to heat and to overall increases in temperature.** Households without air conditioning, people with respiratory illness, and those living alone may also be at greater risk.

- **As compared to the County, Hallandale Beach has more elderly, more non-English-speaking residents, less owner-occupied housing, and lower median household income – all of which increase vulnerability.** There are disparate levels of income and ethnicity in different parts of the City. Mapping out demographics can help the City understand where vulnerable populations reside and where education and outreach campaigns are most required.

- **Post-disaster aid is often focused on assisting nuclear households, thus multiple generation homes may be more vulnerable to delays in assistance.** This scenario may be exacerbated if households are also low-income.

Barriers to Adaptation

- **Some barriers may pertain to the limits on local governments to modify state codes, e.g., Florida energy policies.** Also, state laws often preempt local governments from establishing local policies, e.g., when municipalities want to ban plastic bags.

- **In some instances, restrictions on mangrove trimming make local residents less eager to pursue living shoreline projects.**

- **Federal initiatives may create disincentives for decisions that would build local resilience.** For example, FEMA's National Flood Insurance Program may create affordable insurance rates for homeowners that may otherwise have retreated from high-risk flood zones.

Connecting Dialogue: Compilation of Resources

Tools and Resources to Visualize and Plan for Sea-Level Rise

- Southeast Florida Regional Climate Change Compact: Unified Sea-Level Rise Projection: Consistent data for use by four-county Compact region based on global projections and scientific literature (*Hallandale Beach should refer to these guidelines first*, per the Compact)

- C40- City Climate Hazard Taxonomy: A classification of climate hazards (rec. by Sam Danchuk)

- Climate Central-Surging Seas: SLR analysis, risk finder (rec. by Ellen Mecray)

- Coastal Adaptation to Sea Level Rise Tool (COAST)- Technical tool for local communities; the software interface tool is free; users can evaluate options and analyze costs and benefits of actions or strategies to avoid damage to assets (rec. by Nancy Schneider)

- FEMA- Flood Map Service Center: Public source for flood hazard information, maps, and other products and tools (rec. by Roderick Scott)

- NOAA- CanVis: Downloadable visualization tool that allows users to "see" potential changes. Develop realistic visualizations for stakeholders (rec. by Keren Bolter)

- NOAA- Sea-Level Rise Viewer: Visualizes community-level impacts from coastal flooding /SLR (rec. by Ellen Mecray)

- NOAA- Coastal Flood Exposure Mapper: Platform to help communities visualize hazard impacts with maps that show people, places, and natural resources exposed to coastal flooding; tutorial also available (rec. by Ellen Mecray)

- The Nature Conservancy/NOAA/USGS- Coastal Resilience: Online decision support tool (rec. by Chris Bergh)

- The Nature Conservancy- Coastal Resilience Mapping Portal: Dive into a block-by-block view of Hallandale Beach to see which coastal defense strategies would work where, e.g. which areas can be enhanced by restoration and if so, with what types of features (rec. by Chris Bergh)
- University of Florida- Sea Level Scenario Sketch Planning Tool: For preliminary assessment of vulnerable transportation infrastructure due to SLR. Promotes stakeholder engagement, scoping, assessments, and planning (rec. by Keren Bolter)
- USGS- Coastal Change Hazards: A portal to visualize and map SLR and other hazards (rec. by Ellen Mecray, Soupy Dalyander)
- USGS- Groundwater Information- Freshwater-Saltwater Interactions along the Atlantic Coast: Regional assessment of saltwater intrusion into freshwater aquifers, and groundwater discharge into coastal ecosystems (rec. by Ellen Mecray)

Implementation Tools and Resources for Local Governments

- SE Florida Compact- Sea-Level Rise Implementation Guide: Recommendations for local SE Florida governments on applying SLR data into planning and policy (rec. by Sam Danchuk, Nancy Schneider)
- Envision- Stormwater Management Rating System: Used by other communities in the SE Florida region (rec. by Nancy Schneider)
- FEMA- Pre-Disaster Recovery Planning Guide for Local Governments: Designed to help local governments prepare for recovery from future disasters by engaging with the whole community and planning long-term (rec. by Nancy Schneider)
- Georgetown Climate Center- Adaptation Toolkit: Sea-Level Rise and Coastal Land Use. Provides local and state governments and citizens with practical knowledge to help adapt to SLR (rec. by Sam Danchuk)
- Georgetown Climate Center- Green Infrastructure Toolkit: Guide to planning, implementing, funding green infrastructure to manage stormwater; includes best practices and lessons
- ICLEI– Local Governments for Sustainability and Climate Impacts Group – Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments: A widely-used guide for local governments at the beginning stages of resilience planning (rec. by Sam Danchuk)
- Journal of the American Planning Association- Adaptive Planning for Disaster Recovery and Resiliency: An Evaluation of 87 Local Recovery Plans in Eight States (rec. by Sam Danchuk)
- Naval Facilities Engineering Command (NAVFAC)- Climate Change Installation Adaptation and Resilience Planning Handbook: Developed for Navy Planners, this guidebook offers detailed, step-by-step information on resiliency and adaptation planning (rec. by Anna Marandi)
- University of South Carolina VCAPS (Vulnerability, Consequences, and Adaptation Planning Scenarios): Provides support for local planners and decision-makers concerned about coastal management and adaptation using hazard management and vulnerability concepts (rec. by Ellen Mecray)
- US EPA- Smart Growth Fixes for Climate Adaptation and Resilience: Help for local governments on land-use planning using incremental strategies that can be incorporated into regular processes and policies (rec. by Sam Danchuk)
- SE Florida Compact- Height Restriction Exemption for Raising Buildings Above Flood- Best practice from Key West; details on implementation process, timeline, funding, and community benefits (rec. by Sam Danchuk)
- Specific suggestions/thoughts that emerged from the Connecting Dialogues:

- o Weaving resilience into all local decision-making processes until it is mainstreamed (Mary Francis Jeannot, Anna Marandi)
- o Evaluating risk – this benefitted several County agencies – it avoided redundancies and saved money. Partnering with Emergency Management had co-benefits of reduced risk/ reduced emissions (Sam Danchuk)
- o Co-benefits of staff education: introducing resilience-related issues to city staff may also initiate cross-sectoral collaboration and initiate synergies (Sue Fassler)
- o Steps to implementation: (Sam Danchuk, based on USDN guidelines)

    1. Secure political leadership
    2. Create an internal cross-departmental team and a diverse community-wide steering committee
    3. Inventory emissions and set targets and deadlines
    4. Evaluate vulnerability of government of public assets
    5. Develop strategies to be vetted in public process
    6. Identify leaders to address with timelines and potential funding sources (for buildings, transportation, land use, community design, energy, water, and waste)
    7. Establish benchmarks and reporting process
    8. Regularly communicate to stakeholders

Adaptation Clearinghouses, Networks, Case Studies

- Adapting to Rising Tides (ART)- Website that serves as a case study in metropolitan resilience efforts. Includes planning guidance, tools, information to address challenges in the San Francisco Bay Area
- Annapolis- Protecting the Seaport slide deck with photos (rec. by Roderick Scott)
- Climate Adaptation Knowledge Exchange (CAKE): Access to several adaptation case studies; many other tools and resources in their virtual library (rec. by Anna Marandi)
- Department of Homeland Security (DHS)- Critical Infrastructure Sectors: Outlines policies to strengthen and secure critical infrastructure; many sectors included here (rec. by Ellen Mecray)
- Partnership for Sustainable Communities (HUD, DOT, EPA) - Inter-agency collaborative that seeks to coordinate federal infrastructure investment within various sectors. Case studies, local projects, sustainability indicators (rec. by Ellen Mecray)
- Georgetown Climate Center – Adaptation Clearinghouse: Vast compilation of resources ranging from local to federal, case studies, strategies, toolkits; explore by sector, network, or type of resource (rec. by Sam Danchuk)
- Living Shorelines: successful West Palm Beach project (rec. by Nancy Schneider)
- NOAA- Climate Resilience Toolkit (CRT): Has five steps to resiliency planning, case studies, funding opportunities (rec. by Ellen Mecray and Keely Maxwell)
- The Nature Conservancy / SE Florida Compact: Nature-Based Coastal Defenses in SE FL: seven regional cases of flood, erosion, and SLR mitigation (rec. by Chris Bergh)
- US Army Corps of Engineers (USACE)- North Atlantic Division Comprehensive Plan: Options for hardened as well as nature-based solutions used to protect beaches and coastal structures (rec. by Ellen Mecray)
- USDN (Urban Sustainability Directors Network) – Innovation Products on Climate Change Preparedness: Implementation examples from cities and regions across the country; wide array of toolkits and knowledge products (rec. by Sam Danchuk)

- WeADAPT- Collaborative platform for practitioners, researchers, policy-makers (rec. by Anna Marandi)
- Zilient- Online platform/network for resilience practitioners with news, interviews, and more (rec. by Anna Marandi)

Resources for Climate Change Communication

- SE Florida Regional Climate Change Compact & the Miami Foundation:
  - Effective Sea Level Rise Communication Strategies for Local Governments: Webinar that delves into climate strategies; customized for SE Florida (rec. by Schuyler Brown)
  - We're All in This Together: Suggestions for Effective SLR Communication in Miami-Dade Final report of the above study on climate communication in SE Florida (rec. by Schuyler Brown)
- Baltimore: Example of a city's adaptation/disaster preparedness website (rec. by Anna Marandi)
- Citiscope- Commentary: "Need quick public buy-in on climate action? Think urban heat islands" (rec. by Anna Marandi)
- Georgetown Climate Center: 20 Good Ideas for Promoting Climate Resilience: Initiatives, actions by state/local governments on adaptation planning, mainstreaming adaptation, innovative financing (rec. by Sam Danchuk)
- US EPA- Reach Out & Communicate About Climate & Energy: Checklist, case studies, tools, webinar series (rec. by Nancy Schneider)
- USGS- iCoast: "Did the coast change?" An example of a citizen science web application (rec. by Soupy Dalyander)
- HighWaterLine project: Example of SLR integrated into public art projects; one displayed in Delray Beach (rec. by Nancy Schneider)
- Miami Herald- Climate-related art in SE Florida
- Specific suggestions that emerged from the Connecting Dialogues:
  - Engaging messengers and active residents:
    - East Hallandale Beach – using condo association presidents, property managers, multiple communication strategies to target the variety of stakeholders
    - West Hallandale Beach – using community groups, churches
    - Reaching out to restaurants, sustainable businesses, yoga studios, public schools to create hubs of resilience education and foster partnerships
    - Tapping into pool of local experts/high capacity residents: scientists, teachers, academics and identifying potential local champions (Sue Fassler, Mary Francis Jeannot, Keven Klopp)
  - Holding community visioning workshops, engaging stakeholders on *desired outcomes* and outlining co-benefits of resilience efforts and community goals (Jia Li)
  - Including building owners in flood insurance policy conversations; helping owners understand rates so they can finance and implement flood hazard mitigation projects (Roderick Scott)

Resources for Educating City Staff

- Debra Roberts- Thinking Globally, Acting Locally- Institutionalizing Climate Change at the Local Government Level in Durban: Highlights the importance of educating municipal staff on climate and related issues when implementing adaptation strategies (rec. by Anna Marandi)
- NOAA- Digital Coast Academy: Training resources including adaptation planning for coastal

communities, green infrastructure concepts, managing tourist/visitor use, planning effective projects, facilitating collaborative meetings and much more (rec. by Ellen Mecray)

- US EPA- Workshop Planner: Provides guidance on hosting a successful workshop. For water/ wastewater utility staff, technical assistance providers, community leaders (rec. by Brad Spangler)

Adopting a Whole Community, Equitable Approach

- Community & Regional Resilience Institute (CARRI): Whole community approach to resilience; branded this their Community Resilience System (CRS) (rec. by Anna Marandi)
- FEMA Community Resilience Indicators: Connecting federal-level data and resources to the local level. Map and data viewer available. (rec. by Jia Li, Miguel Ascarrunz)
- Intersector Project: A group that works towards enhancing cross-sectoral collaboration (rec. by Anna Marandi)
- Journal of the American Planning Association- Whole Community Resilience: An Asset-Based Approach to Enhancing Adaptive Capacity before a Disruption (rec. by Sam Danchuk)
- Movement Generation- Redefining Resilience: Principles, Practices, and Pathways: Using an economically- and ecologically-just lens to build community resilience (rec. by Sam Danchuk)
- RAND Corporation: Variety of tools, articles, reports, case studies on community resilience; materials also available in Spanish (rec. by Anna Marandi)
- US EPA – Climate Change, Health, and Environmental Justice: Key points for different populations that are disproportionately affected by climate change impacts. Eight assessment kits (rec. by Sam Danchuk)
- USDN- Equity in Sustainability Program: Capacity building program to help sustainability directors and staff master best practices for adding racial equity lens to sustainability (rec. by Sam Danchuk)
- Specific suggestions that emerged from the Connecting Dialogues:
  - Engaging with residents via existing organizations (church, library, sports groups) or through other nonprofits such as United Way (rec. by Keely Maxwell)
  - Convening vulnerable communities through nonprofits, e.g., New York City Environmental Justice Alliance organized communities after Hurricane Sandy. (rec. by Jia Li)

Regional Resilience – Connecting to the SE Florida Compact and to Broward County

- Broward County- Climate, Energy & Sustainability Program - Local Strategy to Address Global Climate Change; link to Climate Action Plan (rec. by Sam Danchuk)
- Broward County Enhanced Local Mitigation Strategy (ELMS)- newer version to be released soon (rec. by Miguel Ascarrunz)
- Broward County Priority Planning Areas for Sea-Level Rise- PDF of GIS map (rec. by Sam Danchuk)
- Broward County Water Resource Assessment: Program that helps evaluate the status of the County's water resources (rec. by Sam Danchuk)
- Climate Change and Sea-Level Rise in Florida: The effects of climate change on Florida's Ocean and Coastal Resources and its accompanying Special Report (rec. by Ricardo Alvarez)
- Georgetown Climate Center- Lessons in Regional Resilience: Documents lessons learned from regional climate collaboratives in Washington, California, Nevada, and SE Florida Compact) (rec. by Sam Danchuk)
- Ground Zero: Is regional protection an option: Hazard mitigation and regional protection (rec. by Ricardo Alvarez)
- Institute for Sustainable Communities- Regional Governance for Climate Action: Explores

strategies from 12 regional collaboratives and their respective governance structures (rec. by Sam Danchuk)

- SE Florida Compact- More regional reports: Vulnerability Assessment, Health Impact Assessment/Minimizing Health Effects, Adaptation Action Areas, Policy & Advocacy Implementation Report (rec. by Sam Danchuk)

Economics of Climate Change / Financing Adaptation

- Bipartisan Policy Center- Spotlight on D.C.'s Environmental Impact Bond: Describes how D.C. and other cities can finance low-impact development, green infrastructure for effective stormwater management (rec. by Sam Danchuk)

- Journal of Ocean and Coastal Economics- Climate Adaptation Finance Mechanisms: New approaches to financing resilient infrastructure projects (rec. by Sam Danchuk)

- Risky Business- National Report: The Economic Risks of Climate Change in the United States: Report that identifies economic impacts from climate change; explore by region; presents economic costs of inaction (rec. by Sam Danchuk)

- US EPA- Climate Change Impacts and Risk Analysis (CIRA): Project that explores the physical and monetary benefits to the US of global action on climate (rec. by Jia Li)

- Swiss Re- Resilience and the Economics of Risk: Presentation by Alex Kaplan for the SE Florida Compact; shows expected losses that can be averted by early adaptation (rec. by Sam Danchuk)

- Specific suggestions that emerged from the Connecting Dialogues:
  - Considering co-benefits of implementing more efficient and sustainable design into resiliency planning. Some ideas may not be accepted on their own, but packaged into critical infrastructure updates they make financial and environmental sense (increasing energy efficiency/community solar use) (rec. by Jia Li, Chris Bergh).
  - Considering City Center designs in community development. Building social capital through the creation of centralized attractions (basketball courts, electric vehicle charging stations, art spaces, dance studios, spaces for seniors) (rec. by Keely Maxwell).
  - Creating annual contributions to reserves in various funds (general, utility, etc.) then having a number of days of operating budget in reserves, to be relied upon after an extreme event, until state or federal disaster funds are made available (rec. by Keven Klopp)

Grants

- FEMA- Pre-Disaster Mitigation Grant Program: Designed to assist local governments implement a sustained pre-disaster natural hazard mitigation program (rec. by Ellen Mecray) - possible funding source for projects in year 4 or 5 of Hallandale Beach's Capital Improvement Plan (CIP) (Keven Klopp)

- Florida Department of Environmental Protection- Coastal Partnership Initiative Grants: Promotes the protection and effective management of Florida's coastal resources in four priority areas: Resilient Communities, Coastal Resource Stewardship, Access to Coastal Resources, Working Waterfronts (rec. by Chris Bergh)

- National Fish and Wildlife Foundation: Grants based on local business plans. Broward is currently pursuing a grant and looking for locations for an alternative seawall (rec. by Sam Danchuk, Chris Bergh)

- NOAA- Office for Coastal Management: Various grant opportunities (rec. by Chris Bergh)
- US EPA- Green Infrastructure Opportunities: Federal funding sources and tools for funding green infrastructure projects (rec. by Ellen Mecray)
- US Fish & Wildlife Service- National Coastal Wetlands Conservation Grant Program (rec. by Chris Bergh)

Next Steps for Consideration

The following list of next steps was distilled from the dialogue, for the consideration of community leaders as they proceed with their resilience building efforts:

1) Focus on building a multi-pronged communication strategy comprised of at least two aspects:

   o Climate adaptation education and training for city staff (see NOAA training resource listed)

   o Climate adaptation education and for the public and other stakeholders (through workshops, community visioning sessions, and public art).

2) Connect with the County and the SE Florida Regional Climate Change Compact as well as other local communities to ensure that all grant possibilities are explored, resilience strategies are aligned, and that the City is drawing on regional best practices.

3) Identify local champions – elected officials, department heads, active residents, "messengers" who can serve as strong advocates for community resilience. Create an advisory board and an ad hoc task force to engage local experts.

4) Explore and adopt resources, tools and best practices that can help broaden Hallandale Beach's planning spectrum to include equity and whole community resilience considerations.