NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE OF OPPORTUNITY | Climate Smart Communities

Adapting to a Changing Climate: Strategies for Community Planning

This webinar will start shortly.

Office of Climate Change
NYS Department of Environmental Conservation
November 10, 2016

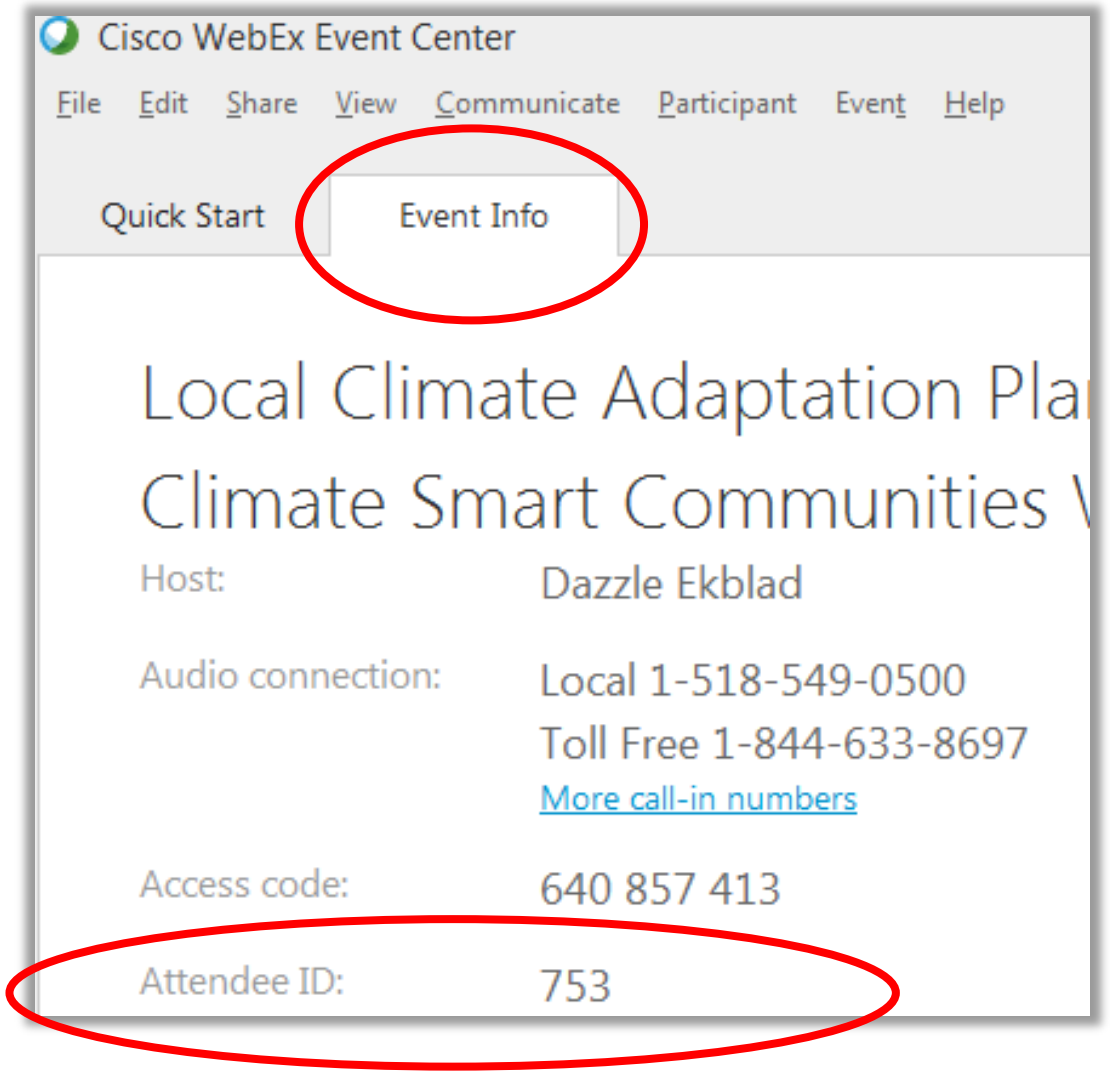
Welcome!

Today's topic: *Adaptation Planning*

Connect to the audio with your phone:

1) **Go to the "*Event Info*" tab for call-in details, and**

2) **Enter *your unique attendee ID* when prompted.**



Today's webinar topic:

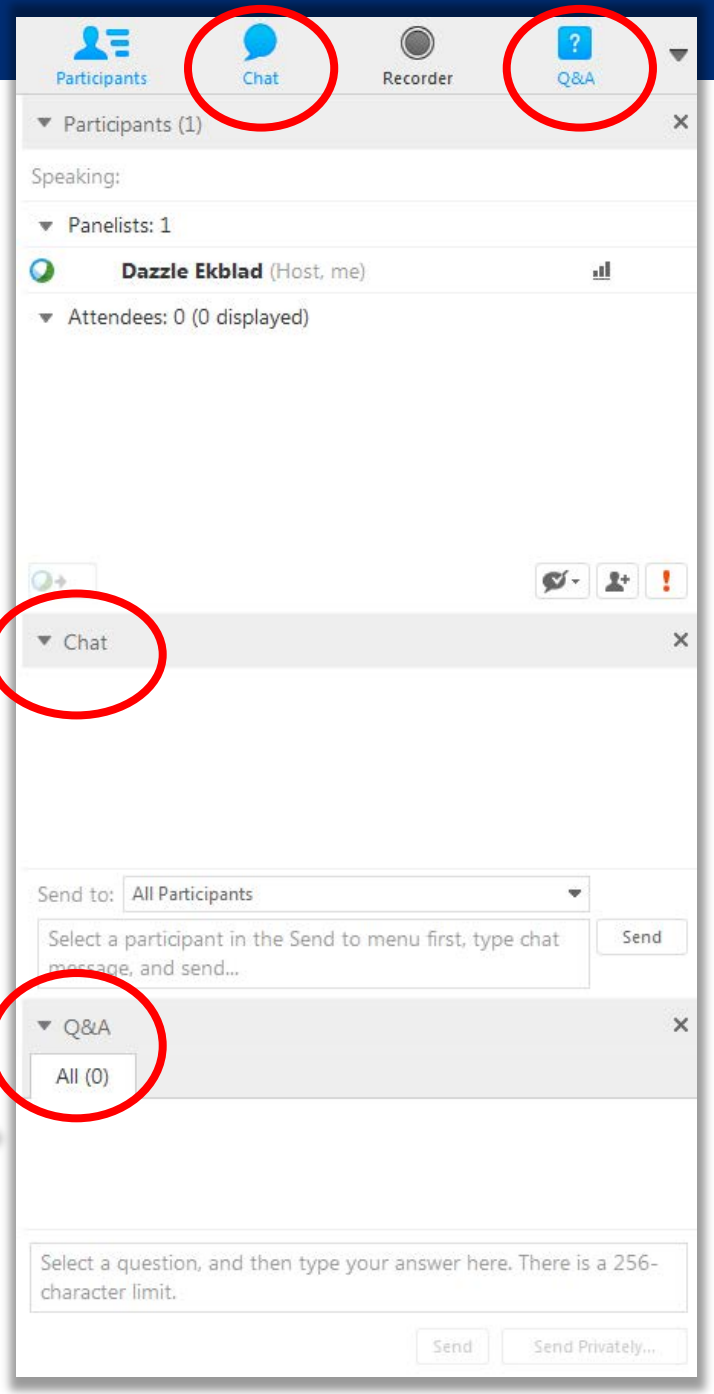
Adaptation Planning

Problems or technical questions?

Use WebEx Chat

Content questions for speakers?

Use WebEx Q&A



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Agenda

- **Announcements** – Dazzle Ekblad, DEC
- **Climate Smart Communities Certification Program** – Dazzle Ekblad
- **Adapting to a Changing Climate: Strategies for Community Planning** – Dr. Missy Stults, Program Officer with the Climate Resilience Fund & Consultant to the Kresge Foundation
- **Q & A** – Dazzle Ekblad, Dr. Missy Stults

Upcoming Events

- Nov. 22, 1:00 PM: **Disaster Recovery Financing for Water and Wastewater Utilities**, EPA webinar
- Dec. 7, 10:30 AM: **Climate Change and Public Health**, Climate Smart Communities Webinar
- Dec. 7, 1:00 PM: **Resilience Mitigation Financing for Water and Wastewater Utilities**, EPA webinar
- Dec. 8: **Economics & Equity of Sustainable Development** – Conference at Pace University, White Plains

NY's Newest Certified CSCs

Town of Mamaroneck

Certified Climate Smart Community
Supervisor Nancy Seligson

Ulster County

Bronze Certified Climate Smart Community
County Executive Mike Hein

NY's Other Certified CSCs

- Village of Dobbs Ferry (bronze)
- City of Kingston (bronze)
- Town of East Hampton
- City of Albany
- City of Watervliet
- Town of Cortlandt
- Orange County

James Clayton, NYSDEC

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CSC Certification

- **CSC Certification Workbook:** Excel tool for estimating points for past actions, tracking progress & submitting documentation
  - Email climatechange@dec.ny.gov for a copy of the CSCC Workbook
- Certification actions related to today's webinar:
  - **# 7.1 Conduct a vulnerability assessment** (8 pts.)
  - **# 7.4 Develop climate adaptation strategies** (5 pts.)
  - **# 7.5 Incorporate climate resiliency vision, goals, & strategies into local plans and projects** (3 pts.)

Adapting to a Changing Climate: Strategies for Community Planning

Dr. Missy Stults

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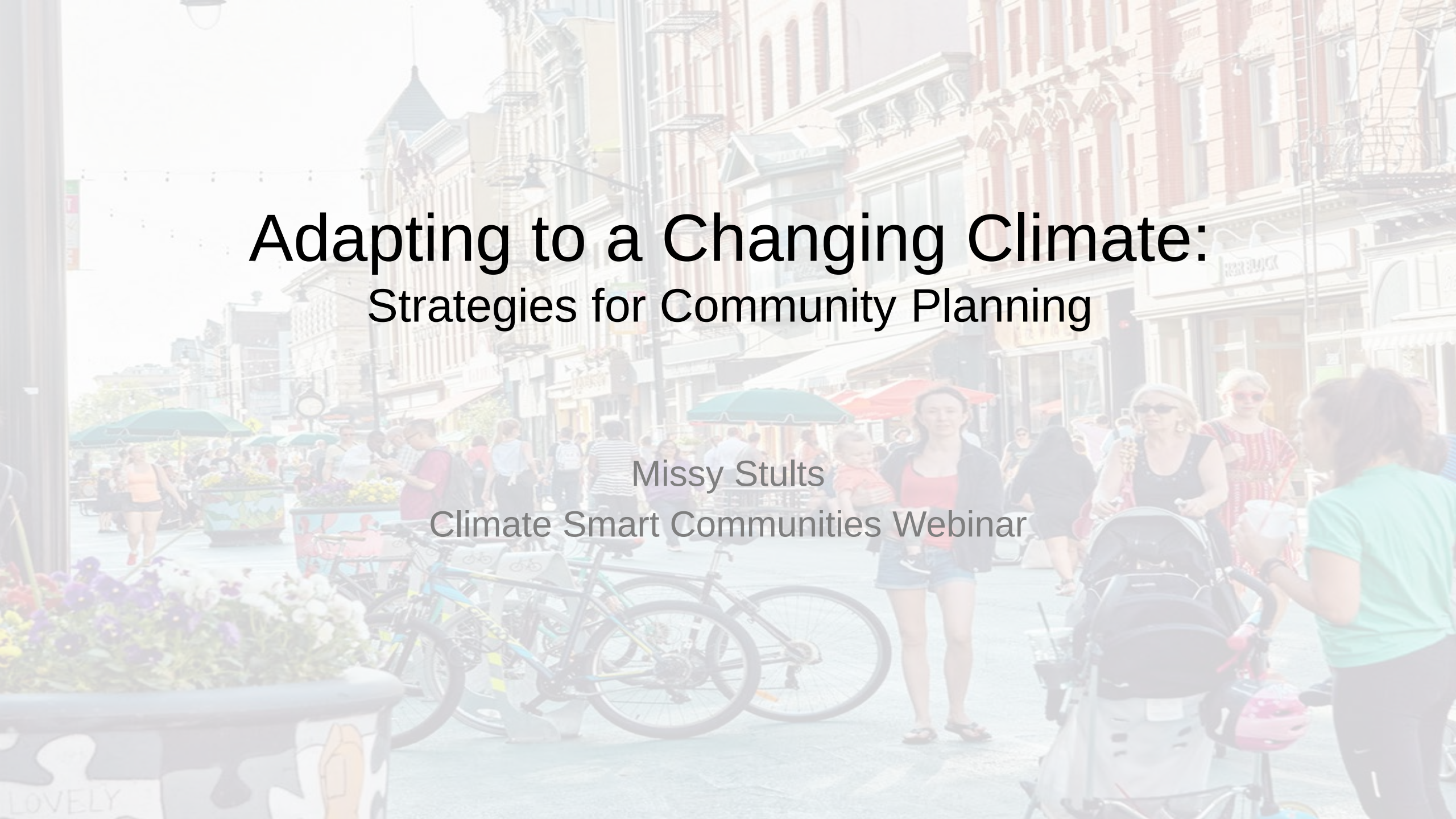
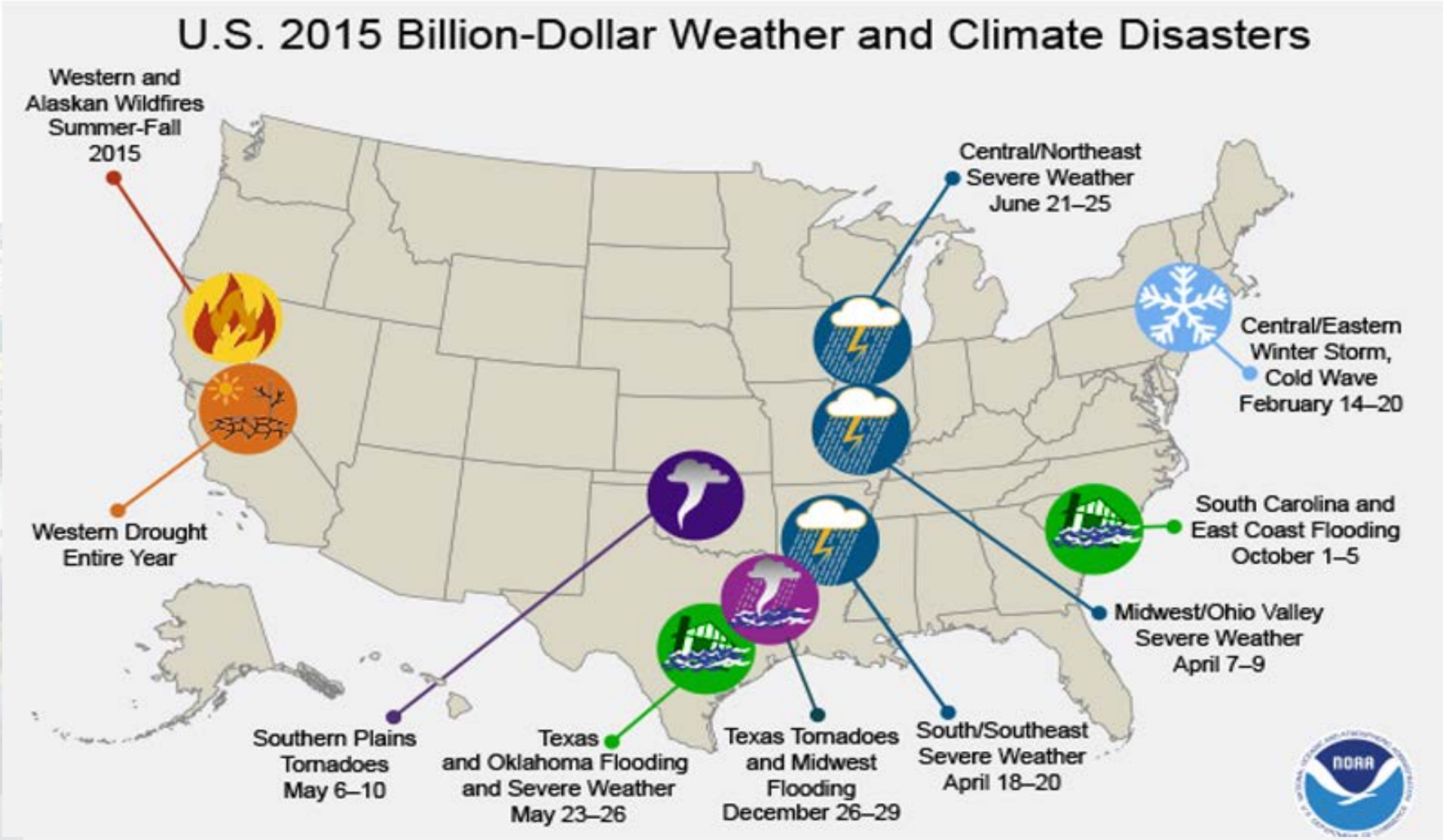


Adapting to a Changing Climate:
Strategies for Community Planning

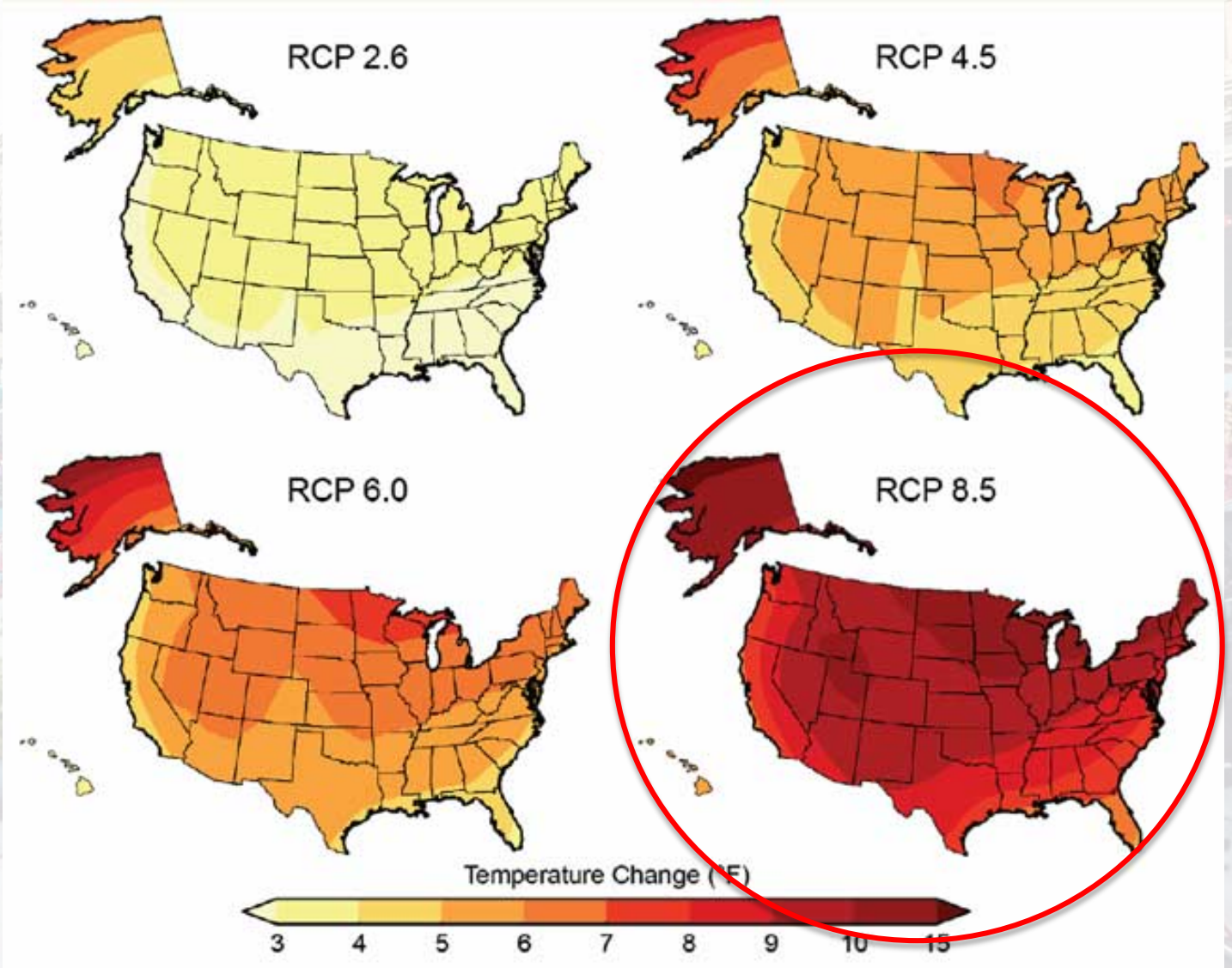
Missy Stults

Climate Smart Communities Webinar

Motivation:
Disasters are on the Rise



Motivation:
The Climate is Changing

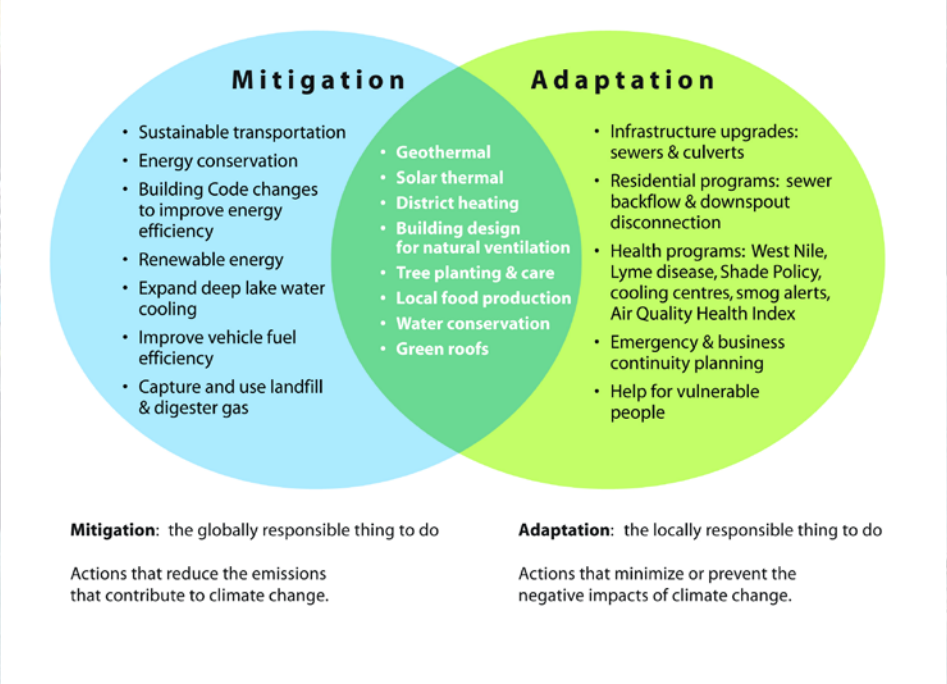


Motivation:
Local Communities

What Does this Mean?

Avoid the unmanageable (mitigate)

And manage the unavoidable (adapt)



Today's Discussion

How are U.S. communities planning for climate change?

Holistic Assessment of Adaptation Planning

Uncertainty in Adaptation Planning

Hazard Mitigation Plans

Actions in Adaptation Plans

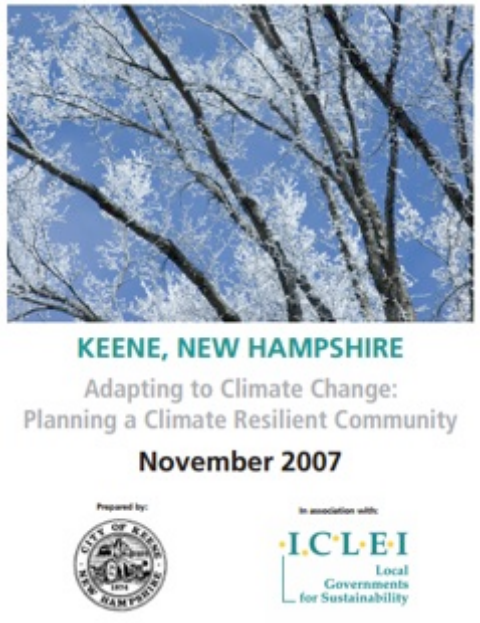
Holistic Adaptation Planning

Question:

- How do existing climate adaptation plans align with emerging principles of plan quality? What community attributes are associated with higher quality plans?

Plan Evaluation

- Documenting “plan content and evaluating overall strengths and weaknesses, evaluate their overall quality, and provide a basis for ensuring that they reach a desirable standard”



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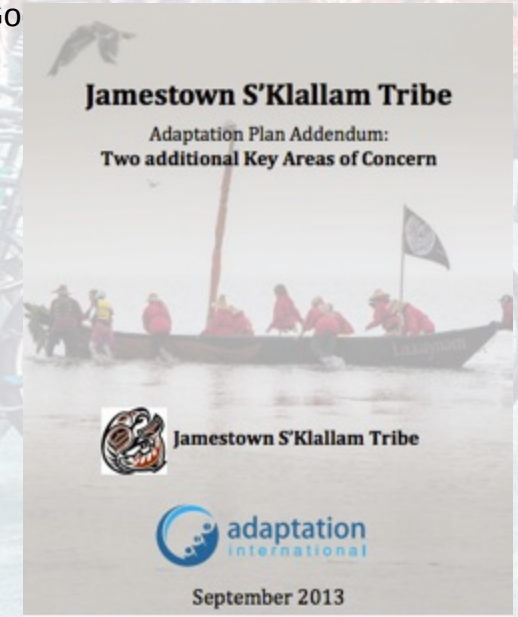
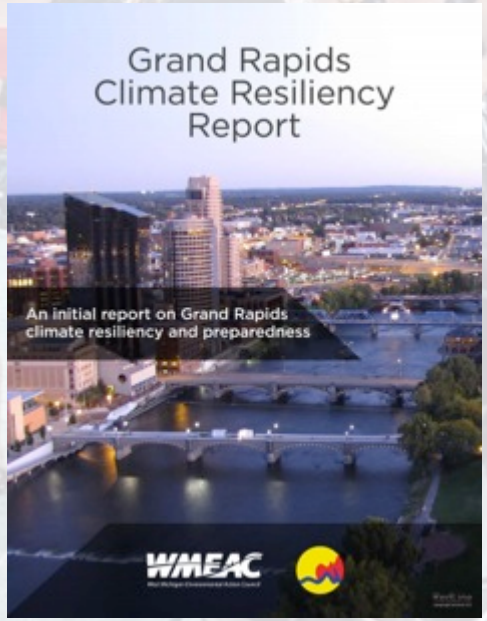
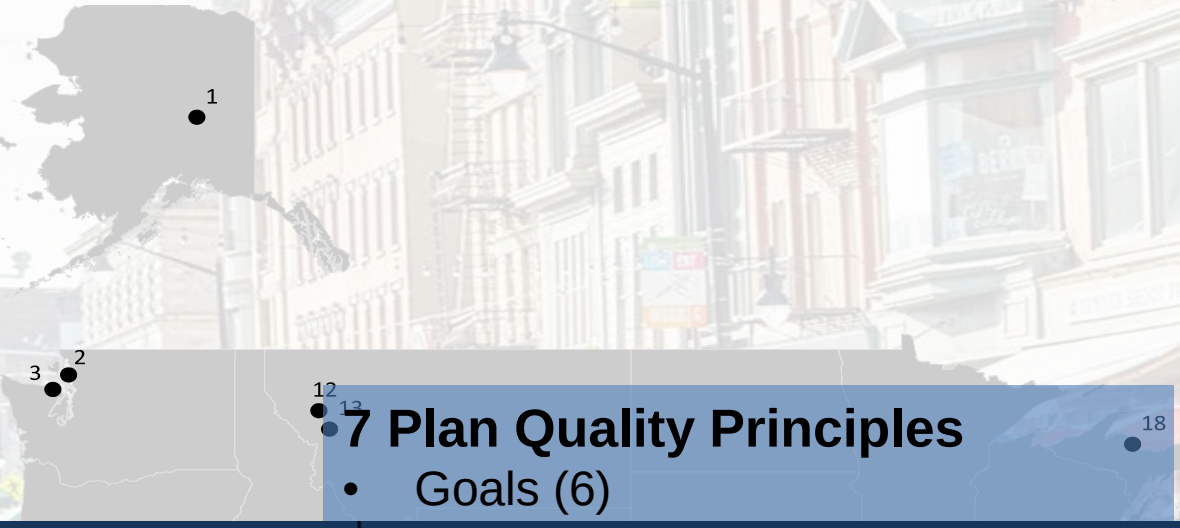




Sample and Methods



44 Local, Stand Alone Adaptation Plans

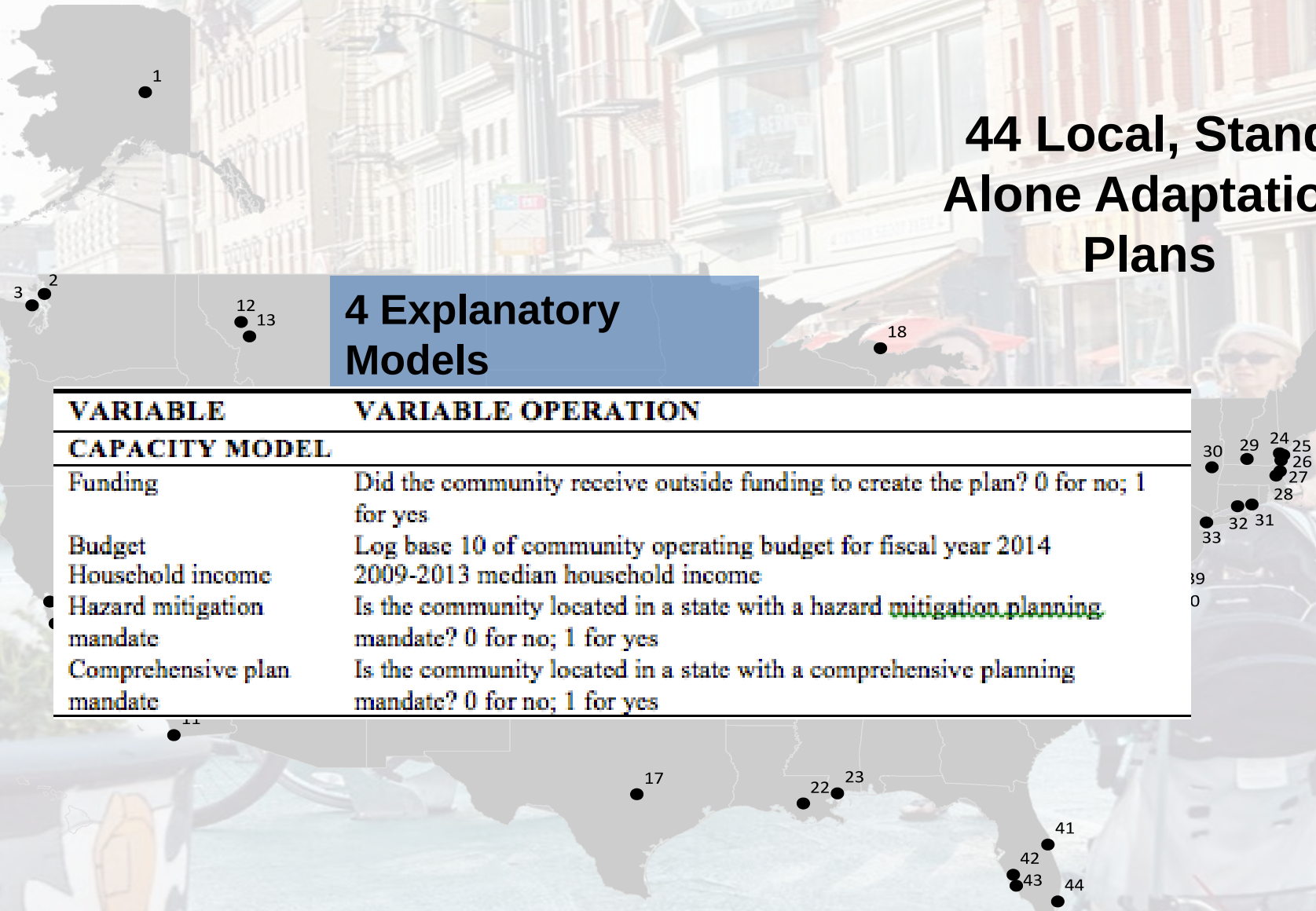
7 Plan Quality Principles

- Goals (6)

Criterion	Description
ARTICULATION OF PURPOSE, GOALS, AND OBJECTIVES	
Plan purpose	States the purpose of the plan.
Vision statement	Includes a vision statement, which establishes an overall image of a desired future.
Define resilience, adaptation, or preparedness	Defines resilience, adaptation or preparedness.
Goals	Includes goals, which are outcomes that the community aspires towards. Goals are usually expressed in adjectives and nouns (not verbs) and are not quantified. Goals reflect public values and express future desired conditions.
Objectives	Includes objectives, which are tangible, measurable outcomes leading to the achievement of a goal
Objectives detailed	Includes quantifiable objectives for each goal (e.g., reduce heat-related mortality by 1,000 by 2020; must have objectives for each goal).

Sample and Methods

44 Local, Stand Alone Adaptation Plans



4 Explanatory Models

VARIABLE	VARIABLE OPERATION
CAPACITY MODEL	
Funding	Did the community receive outside funding to create the plan? 0 for no; 1 for yes
Budget	Log base 10 of community operating budget for fiscal year 2014
Household income	2009-2013 median household income
Hazard mitigation mandate	Is the community located in a state with a hazard mitigation planning mandate? 0 for no; 1 for yes
Comprehensive plan mandate	Is the community located in a state with a comprehensive planning mandate? 0 for no; 1 for yes

Results:
Plan Quality

Principle	Definition	Components of Principle	Criteria	Mean	Std Dev	Range
Goals	Future desired conditions	Plan purpose, vision, goals, and objectives	6	0.40	0.22	0.00 – 0.67
Fact Base	Empirical foundation that identifies and prioritizes issues to ensure that actions are well informed	Data sources, analysis of current conditions, climate change exposure, vulnerability and risk assessment	44	0.51	0.14	0.25 – 0.86
Actions	Guide to decision making to ensure that plan goals are achieved	Capacity building, land use, green infrastructure, etc.; cost and co-benefits of action options; prioritization of actions	23	0.62	0.18	0.00 – 0.96
Uncertainty	Recognition of and approaches to overcome uncertainty in future climate projections	Recognize sources of uncertainty; consider multiple future scenarios; flexible, robust, or no-regret actions	13	0.28	0.16	0.00 – 0.69
Public participation	Recognition of and actions for engaging actors in preparing the plan	Description of planning process and techniques to engage stakeholders; identification of individuals involved in preparation of the plan	9	0.44	0.28	0.00 – 1.00
Coordination	Recognition of the interdependent actions of multiple organizations and the need for coordination	Engagement of local universities, state agencies, businesses, neighboring jurisdictions, etc. in the planning process	9	0.36	0.24	0.00 – 0.89
Implementation and monitoring	Guidance to translate plan actions into action and track progress towards goals	Organizational responsibilities, timelines, and funds for implementation and monitoring	16	0.29	0.24	0.00 – 0.88

Average score: 40.6%

Highest: 76.6%
Lowest: 12%

12 plans scored over 50%

Results:
Variation in Plan Quality

- Three variables were significantly correlated with plan quality:

Formal adoption of plan

Written by a planner

Lewes, Delaware combined a hazard mitigation update with climate adaptation planning carried out in partnership with non-profit, academia, the community and NOAA. Received 78% of possible points for strategies and 75% for future projections. Only 15% for uncertainty. Overall score: 57%

Photo: sussex.org

New York City undertook an intensive adaptation planning process as part of their PlaNYC sustainability program. In terms of quality, plan scored 33% for public participation; but 78% for coordination; 70% on future projections; 91% on strategies. Overall score of 64%.

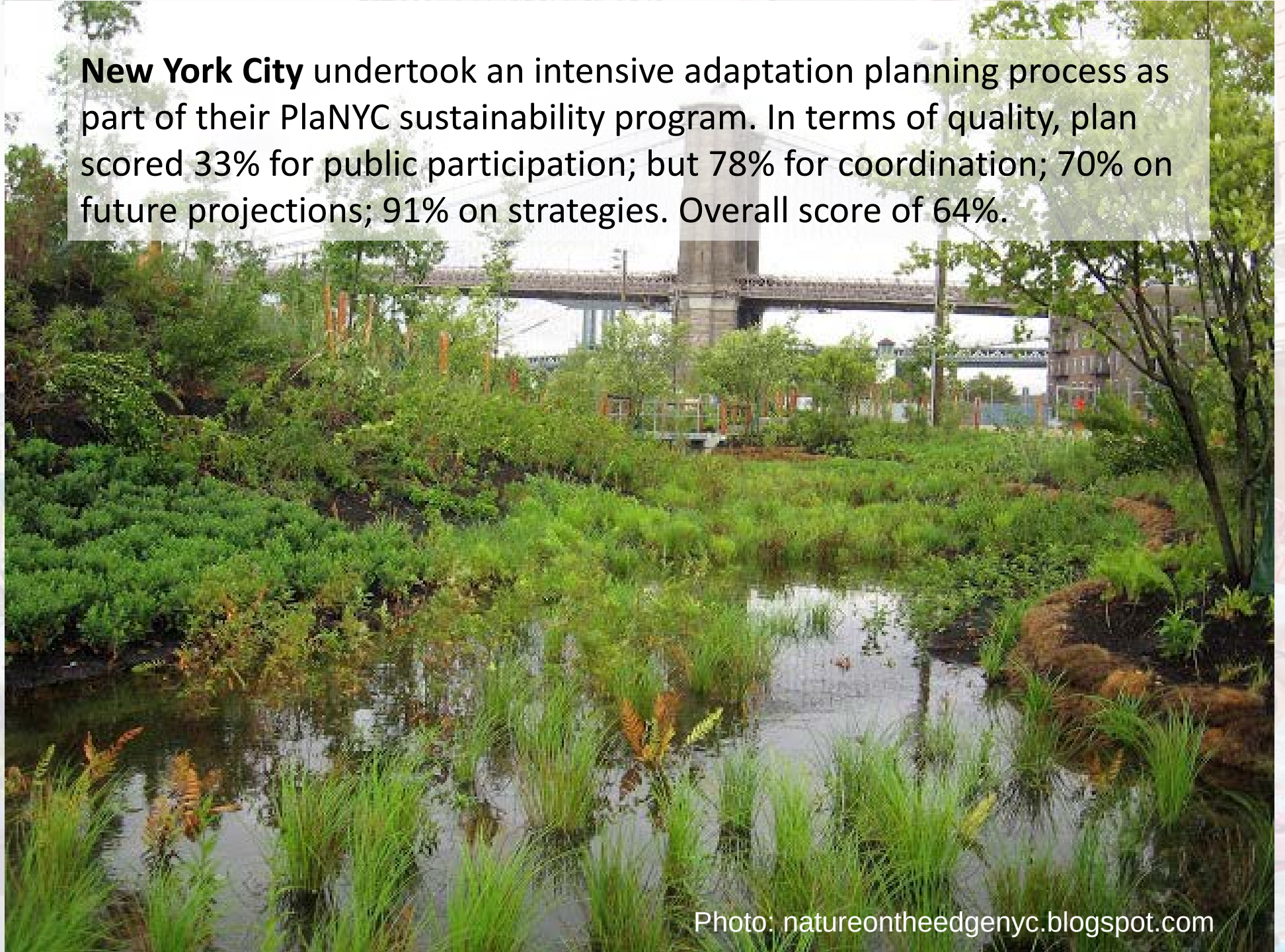
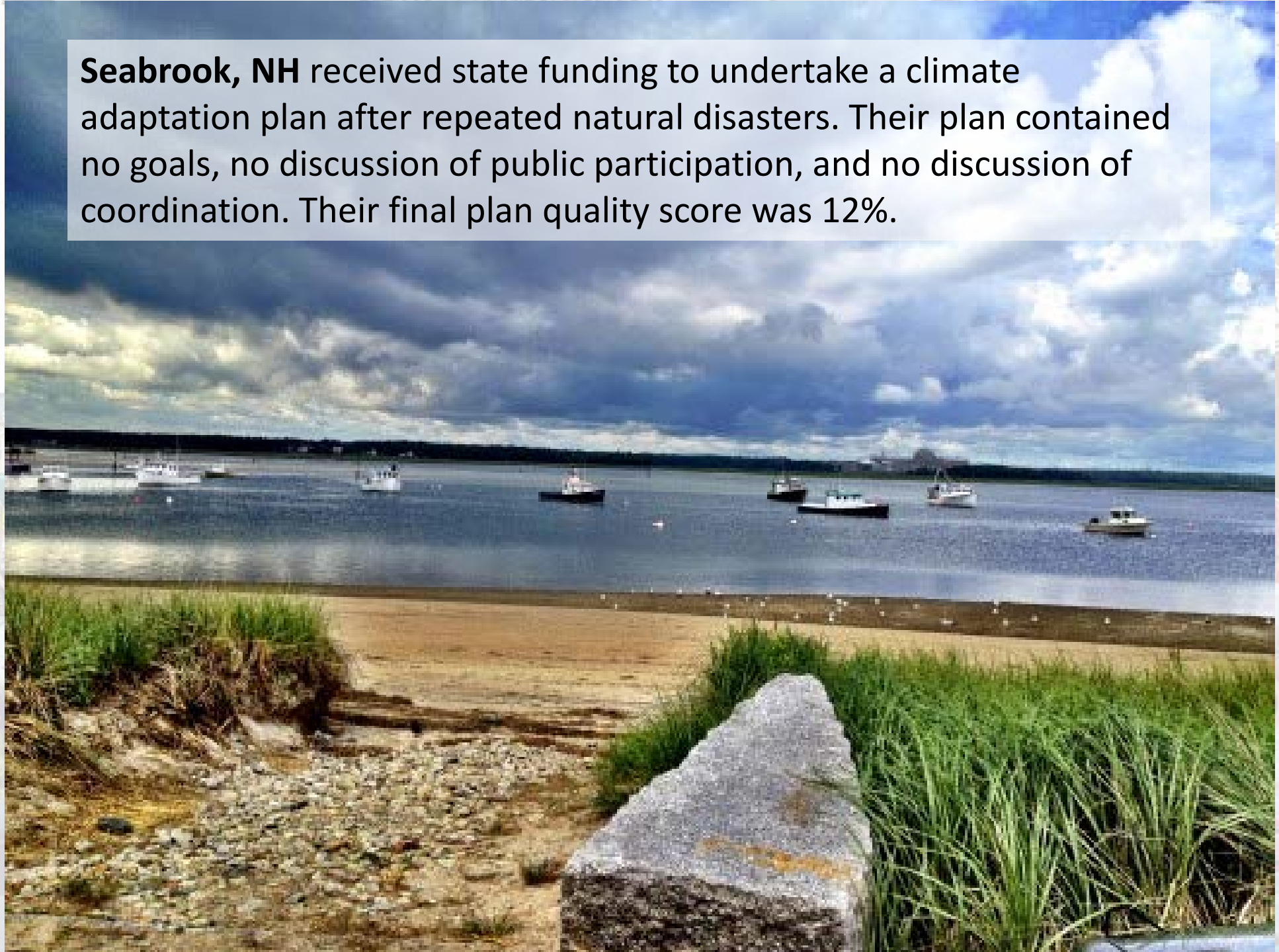


Photo: natureontheedgenyc.blogspot.com

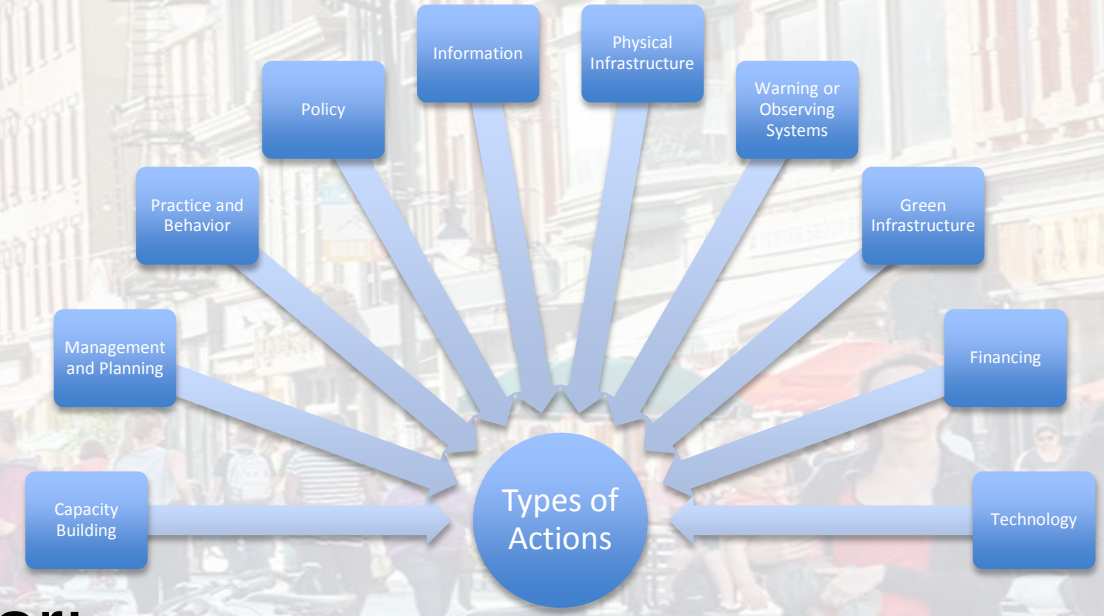


Seabrook, NH received state funding to undertake a climate adaptation plan after repeated natural disasters. Their plan contained no goals, no discussion of public participation, and no discussion of coordination. Their final plan quality score was 12%.

Adaptation Actions

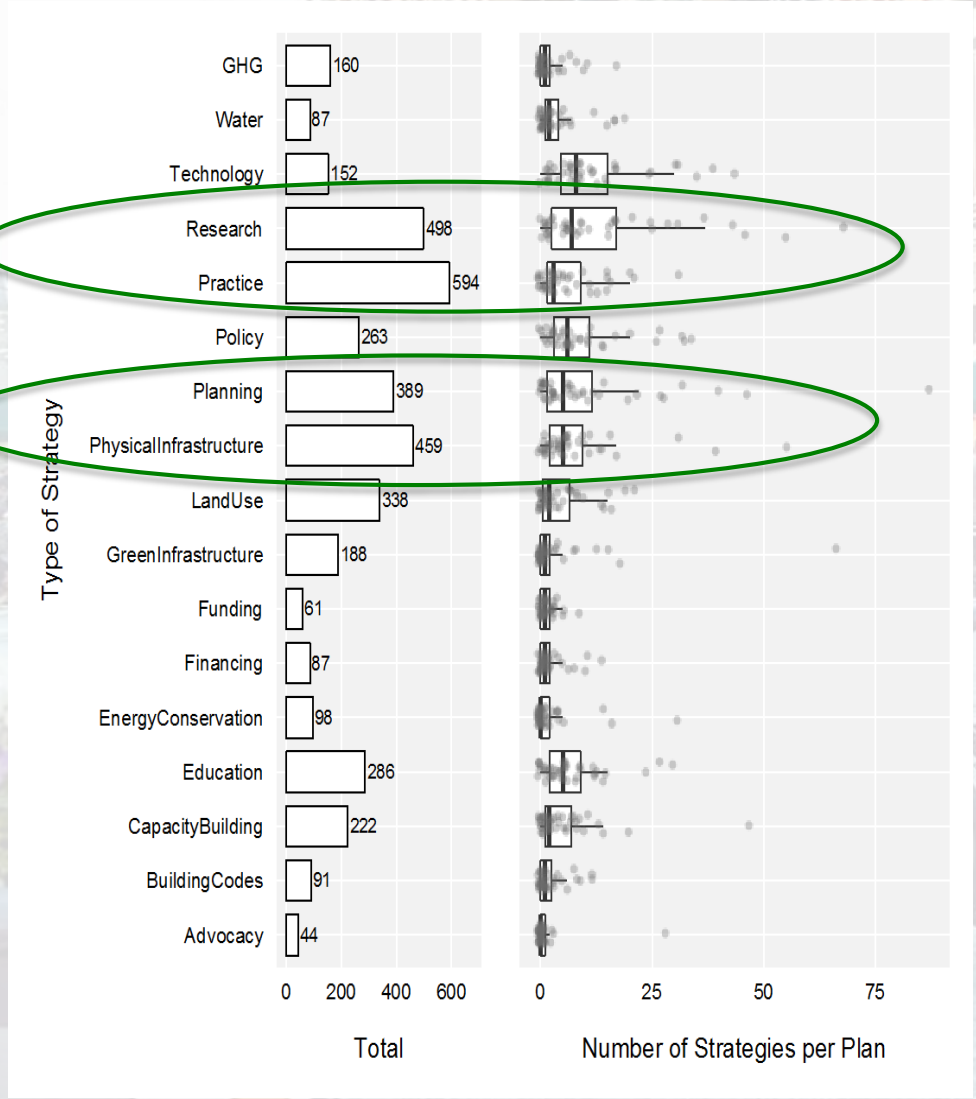
- What are U.S. local governments planning to do to prepare for climate change? How do these actions align with the risks or vulnerabilities faced by these local governments? Do local governments provide detail to support the implementation of the actions they identify?

Sample and Methods



- Code for:
  - Type of action (based on Biagini et al., 2014)
  - Implementation criteria (Bassett and Shandas, 2010; Berke and Lyles, 2013; Brody and Highfield, 2005; Hughes 2015)
- Semi-Grounded Theory to reclassify strategies (Thornberg 2012)

Results: **Actions**



3,375 discrete actions: 17 types

Average: 93 actions /plan

Range: 447 actions (Lee County, FL) to 14 actions (Milwaukee, WI)

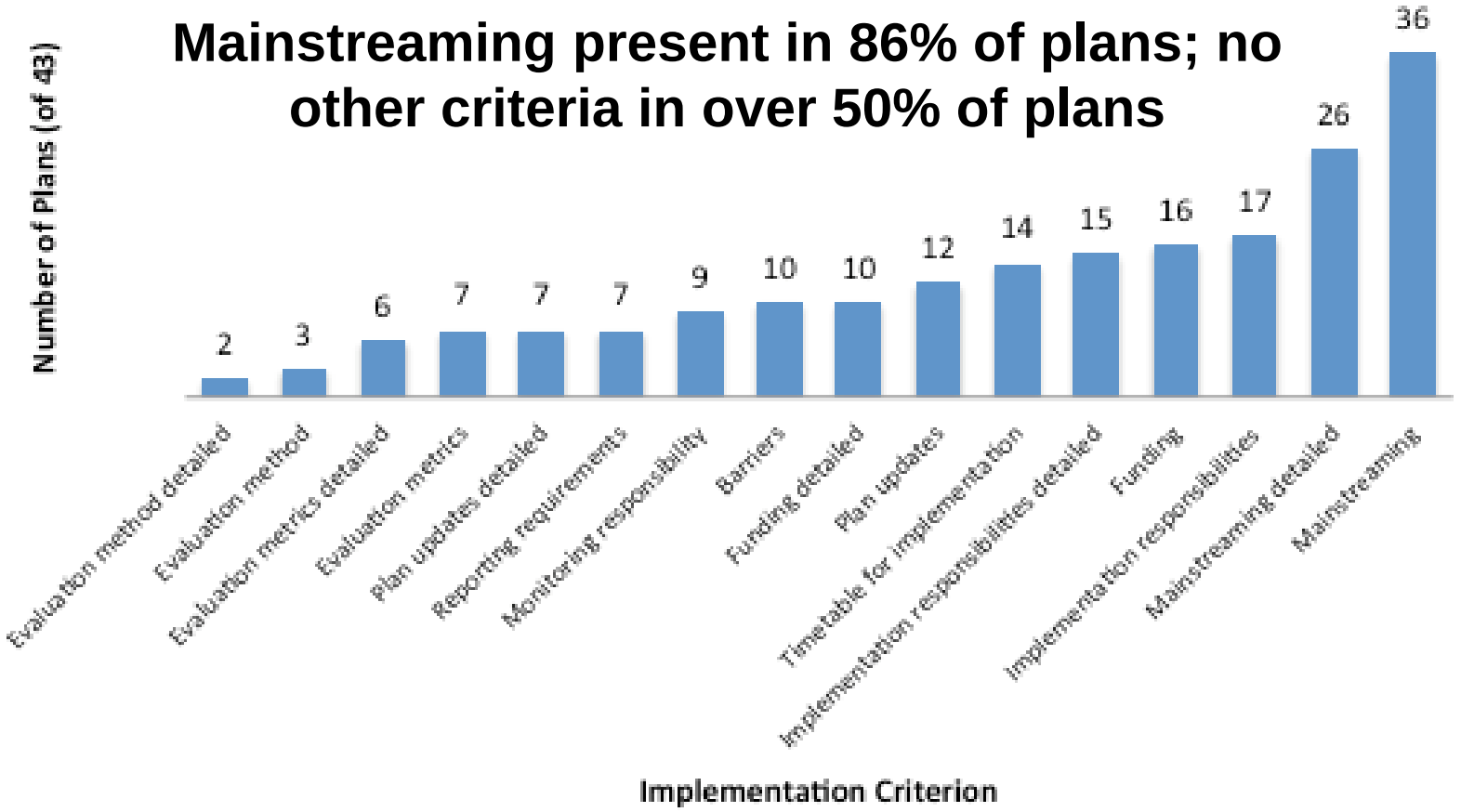
Average: 12 of 17 types / plan

Database of Strategies

City	Strategy	Category	Specific Impact/Sector
Albany	A vulnerable area overlay district includes both temporal and spatial planning requirements to reflect changes in sea level and flood inundation. Land in this area would be subject to additional building codes and land-use regulation in order to protect property from flooding. New development could be required to conduct a vulnerability assessment as part of the permit review process, similar to the City of Boston.	land use	Infrastructure: Buildings/Development
Albany	Develop design standards and building and zoning codes that address the impacts of climate change. These might include no build zones, renewable energy incentives, green building requirements, and freeboard incentives for flood prone areas.	land use, building codes and engineering design standards	Infrastructure: Buildings/Development
Albany	Work to become a Class 1 Community under FEMA's Community Rating Systems	practice and behavior	Infrastructure: Buildings/Development
Albany	Create a plan to address flooding for at-risk critical facilities	planning	Infrastructure: Critical Facilities
Albany	Identify vulnerable communications infrastructure	research and monitoring	Infrastructure: Critical Facilities
Albany	Cool strategies include green roofs, white roofs, strategically planted trees, green walls and urban greening. Many of these strategies are also addressed in other recommendations.	green infrastructure	Infrastructure: Energy
Albany	Increase local renewable energy sources	technology	Infrastructure: Energy
Albany	Invest in solar powered generators. Diesel generators have significant negative impacts on air quality and should not be used especially during extreme heat events.	technology	Infrastructure: Energy
Albany	Enhance stations and stops to provide protection from the elements such as structures or trees for heat relief	physical infrastructure	Infrastructure: Public Transportation
Albany	Ensure that buses will be able to keep passengers comfortable and function properly with increased heat.	practice and behavior	Infrastructure: Public Transportation
Albany	Ensure that municipal employees are equipped to work from home when flooding prevents access to downtown Albany in order to maintain other services.	practice and behavior	Infrastructure: Public Transportation
Albany	Paint bus roofs white	practice and behavior	Infrastructure: Public Transportation
Albany	There are three strategies for adapting infrastructure: Accommodate (i.e. elevate), retreat, or abandon. Link these ratings with capital improvement schedules and implement appropriate stormwater BPMs.	practice and behavior; funding	Infrastructure: Public Transportation
Albany	Green infrastructure such as swales, rain gardens, and permeable pavers alongside roads, as well as permeable pavement, can help capture stormwater runoff and mitigate road flooding. Excessive heat events may impact the durability of road surfaces.	green infrastructure	Infrastructure: Roads
Albany	Transform low-volume roads with impervious pavement in order to increase water infiltration and reduce urban flooding.	green infrastructure	Infrastructure: Roads
Albany	Implement a pavement removal day where residents can apply to have their pavement torn up in order to create more pervious surfaces. This has been done in urban areas such as Somerville, MA by employing teams of volunteers.	practice and behavior	Infrastructure: Roads
Albany	Incorporate projected precipitation data and Hudson River tide levels in future stormwater/ CSO mitigation projects and plans	planning	Infrastructure: Sewer treatment
Albany	Develop and adopt policies regarding the citing, permitting, and maintenance of MSW and other similar facilities in designated and projected flood-prone zones to ensure that dispersal of toxic materials and MSW does not occur during flooding events.	policy	Infrastructure: Solid Waste
Albany	Implement a citywide green infrastructure program and increase urban greening through a Green Area Factor ranking system.	green infrastructure	Infrastructure: Water
Albany	Require new development projects to demonstrate projected water use	policy	Infrastructure: Water
Albany	Enact Water Efficient Landscaping Standards	water conservation, policy	Infrastructure: Water
Albany	Provide natural habitat as much as possible in open space planning to support biodiversity and as a measure of flood control.	green infrastructure	Natural Resources: Natural Habitat
Albany	As a particularly sensitive habitat, the city should work with the Commission, as well as the Towns of Colonie and Guilderland, to protect the remaining unprotected parcels of Pine Bush habitat.	land use	Natural Resources: Natural Habitat

Results:
Implementation Guidance

Average: 5/16 implementation criteria

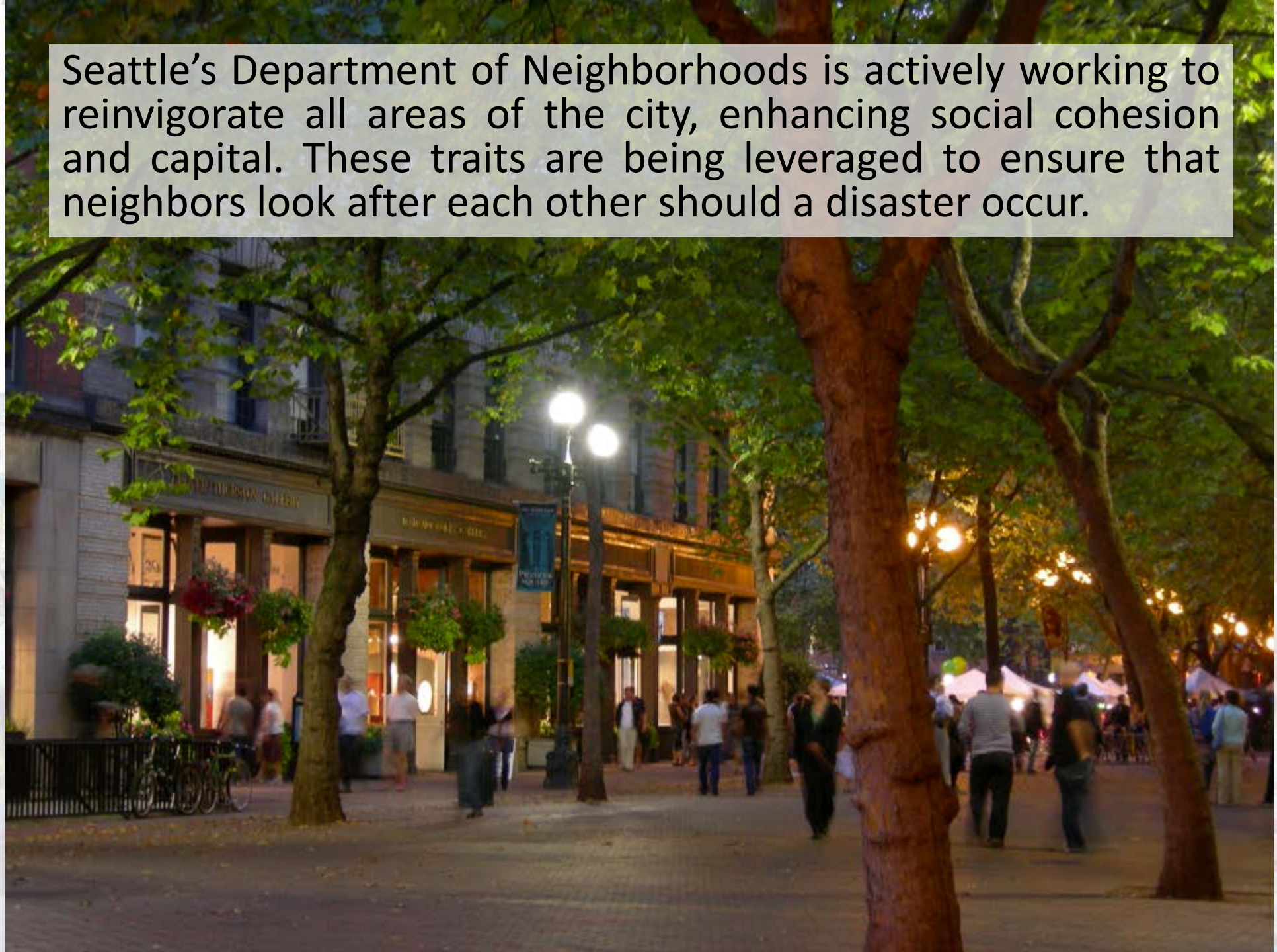


Joe Taylor Park in Grand Rapids, Michigan is a 2.2 acre community park that provides green space to an underserved area while simultaneously managing stormwater for the entire neighborhood (site can manage the 1st inch of rainfall directly on site)

Following a major flooding event in 2007, the City of Keene, New Hampshire began working to replace dilapidated culverts and resizing them based on rainfall projections under a changing climate.

Boston, MA has embedded climate change into their multi-hazard mitigation plan → Boston Redevelopment Authority requires that all large new developments consider climate change in their design and siting decisions.

Seattle’s Department of Neighborhoods is actively working to reinvigorate all areas of the city, enhancing social cohesion and capital. These traits are being leveraged to ensure that neighbors look after each other should a disaster occur.



Summary

	Strengths	Opportunities for Improvement
Local Stand Alone Climate Adaptation Plans	• Strong fact base with pervasive use of multiple climate scenarios • Strong vulnerability assessments, with analysis of climate impacts to built, economic, natural, and social systems • Lots of actions, with a dominance of research and monitoring, planning, and practice and behavior actions • Moderately strong public participation in plan creation • High linkage to other community plans, including hazard mitigation plans • Identification of a variety of sources of uncertainty • Using uncertainty reducing techniques from both the 'predict and plan' and 'adapt and monitor' approaches	• Limited details about ***where*** impacts will occur • Limited engagement of non-traditional stakeholders in planning process • Limited discussion about maintaining public participation post plan creation • Limited use of advanced uncertainty mitigating techniques from "*adapt and monitor*" approach • Extremely limited implementation details • Limited prioritization of actions

Climate Change and Hazards Planning

Existing Required Material per the FEMA Crosswalk	Opportunity to Integrate Climate Change
Element A: Planning Process	
A1: Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?	Include climate-related stakeholders both from within the government and from the community, in the planning process. (A1)
A2: Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as others interests to be involved in the planning process?	Include regional climate-related entities in your planning process. (A2)
A3: Does the Plan document how the public was involved in the planning process during the drafting stage?	
A4: Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information?	Include detail from existing climate plans or reports into your analysis. This includes plans at higher and lower levels of government. (A4)
A5: Is there discussion of how the community(ies) will continue public participation in the plan maintenance process?	
A6: Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle?)	Develop plan to integrate new climate information as it becomes available and adjust strategies/actions accordingly. (A6)
Element B: Hazard Identification and Risk Assessment	
B1: Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction?	Consider either: 1) adding climate change as a stand alone hazard; or 2) adding how climate change could affect the type, location, severity, duration, and reoccurrence intervals for all the other hazards in your community. (B1)
B2: Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction?	Make sure that climate change is factored into probability calculations for future hazards. (B2)
B3: Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction?	Include climate-related changes to hazards in the vulnerability analysis and hazard impact summaries. (B3)
B4: Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods?	Consider also including structures likely to be flooded in the future given changes to the floodplain likely to take place in a climate-altered future. (B4)
Element C: Mitigation Strategy	
C1: Does the Plan document each jurisdiction's existing authorities, policies, programs, and resources and its ability to expand on and improve these existing policies and programs?	Include programs related to climate change in your capability assessment. (C1)
C2: Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?	Consider discussing how community will go beyond NFIP and look at structures in the 1 in 500 year (or more) floodplain. (C2)
C3: Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?	Design goals with climate change considerations in mind. (C3)
C4: Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?	Make sure a mixture of short and long-term strategies are selected and that these strategies are designed to be viable in a climate-altered future. Look at green infrastructure, physical infrastructure, policy, planning, and general adaptive strategies. (C4)
C5: Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction?	Include criteria related to climate change in the evaluation of potential actions, thereby ensuring that most strategies selected for implementation are climate-smart. This includes including the cost of inaction in the cost-benefit analysis to make sure that the cost of adaptation (action and inaction) are both accounted for. (C5)
C6: Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?	Integrate climate-related priorities into other plans, such as comprehensive, sustainability, or capital improvements plans to the fullest extent possible. (C6)
Element D: Plan Review, Evaluation, and Implementation (applicable to plan updates only)	
D1: Was the Plan revised to reflect changes in development?	Be sure to discuss weather and climate-related changes (e.g., changes to the floodplain, changing disease vectors, temperature increases) that have impacted risks over the last few years. (D1)

Thank you

https://figshare.com/articles/Content_Analysis_of_U_S_Local_Adaptation_Plans_xlsx/3843444

Contact Details

- Missy Stults
  - Missy.stults@gmail.com

- Other resources:
  - American Society of Adaptation Professionals
  - National Adaptation Forum (May 2017)
  - Intergovernmental Panel on Climate Change
  - National Climate Assessment

Questions?

- Office of Climate Change
- NYS Department of Environmental Conservation
- 625 Broadway

  Albany NY 12233-1030
- climatechange@dec.ny.gov
- 518-402-8448

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