Integrating Sustainability Planning at the Urban and Regional Scales

Develop New Regional Agenda and Sustainable Development Goal (SDG) 18:
"Make regions inclusive, safe, resilient and sustainable"

Presented by: APA International Division, Regional and Intergovernmental Planning Division, and Sustainable Communities Division

APA NPC 2019, San Francisco – Session No. NPC198091 – April 13, 2019, 1-2:15 pm

Session Objectives and Scope

Session Learning Objectives:

- Understand the stated and potential roles of regional planning in the Sustainable Development Goals (SDGs) and New Urban Agenda (NUA)
- Appreciate the different roles that regional planning plays in sustainable urban planning as illustrated by different organizations, initiatives and methodologies used internationally and in the US.
- Find out how sustainable regional and urban planning are, can be, and should be integrated

SDG/New Regional Agenda Objectives:

- Establish new SDG18/New Regional Agenda (NRA) and the Region We Need: provide sustainability agenda for regional planning: "Make regions inclusive, safe, resilient and sustainable"
- Mainstream regional planning "enabling environment" from SDG 11.A to SDG 17 or 18 as measure cross-cutting several SDGs
- Put regions on equal footing with cities and nations in partnerships language in SDGs and NUA
- Use the regional planning methods presented as general examples of how to tailor SDGs to particular planning situations

Session Structure and Panelists

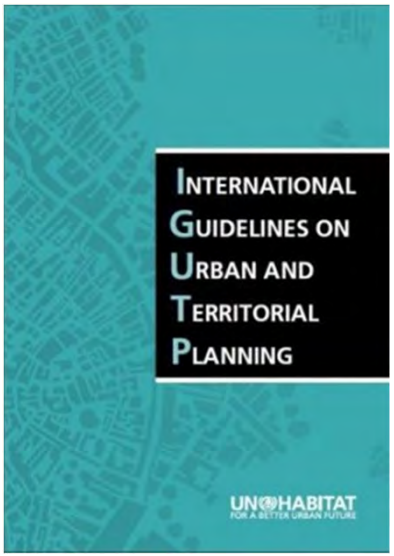
- Introduction (5 minutes). Tim Van Epp, FAICP, Past Chair, APA International Division, Moderator, and Managing Director, Eurasia Environmental Associates LLC, will outline session objectives and scope; summarize UN Habitat SDG 11/NUA and related planning guidelines; introduce speakers; explain audience engagement approach; and pose initial questions for audience.
- **UN Habitat's "International Guidelines: Urban and Territorial Planning (IG-UTP)"** (10 minutes). Bruce Stiftel, FAICP, Professor Emeritus, Georgia Tech, will describe this UN guidance on implementing the SDG 11 and the NUA and compare it to the other methods presented in the session.
- Integrating Urban & Regional Planning: Climate Response Case (10 minutes). Vincent Riscica, AICP, Integrated Planning, Arup, will discuss integrated urban-regional climate resilience models taken from among the 100 Resilient Cities, Rebuild by Design, New York Rising, and Resilience by Design initiatives, including both international and US (NYC and Bay Area) case studies.
- Integrated Urban & Regional Planning: Biophilic City Planning Case (10 minutes). Scott Edmondson, AICP, ISSP-SA, SF Planning, will present the relevance of biophilic city planning and design for integrated urban-regional sustainability planning with cases from the International Biophilic Cities Project and his work on regenerative urbanism.
- Regional Planning Trends (10 minutes). Sharon Rooney, RLA, AICP, Chair, APA Regional and Intergovernmental Planning Division (RIPD) and Chief Planner, Cape Cod Commission, will overview emerging trends in US regional planning, based on RIPD's recent PAS report, emphasizing RIPD's current water and resilience planning initiative.

Questions for Audience

- Do you know of examples of where the presented planning methods have been implemented (or proposed)? Successful and effective?
- Are regional planners and city planners and designers, and their organizations, aligned/ coordinated on sustainability and resilience planning?
- Should US planners and designers align their sustainability planning with the UN Habitat SDGs? With SDG 11 / New Urban Agenda?
- Should we push for formal development and adoption of some form of a new SDG 18 / New Regional Agenda?
- Please complete the handout table to compare the cases in terms of this session's theme on the need and methods for integration for sustainability planning success and the survey soliciting ideas for follow-on research and dialogue.

Methodology Comparison: Integrating Sustainability Planning at Urban and Regional Scales

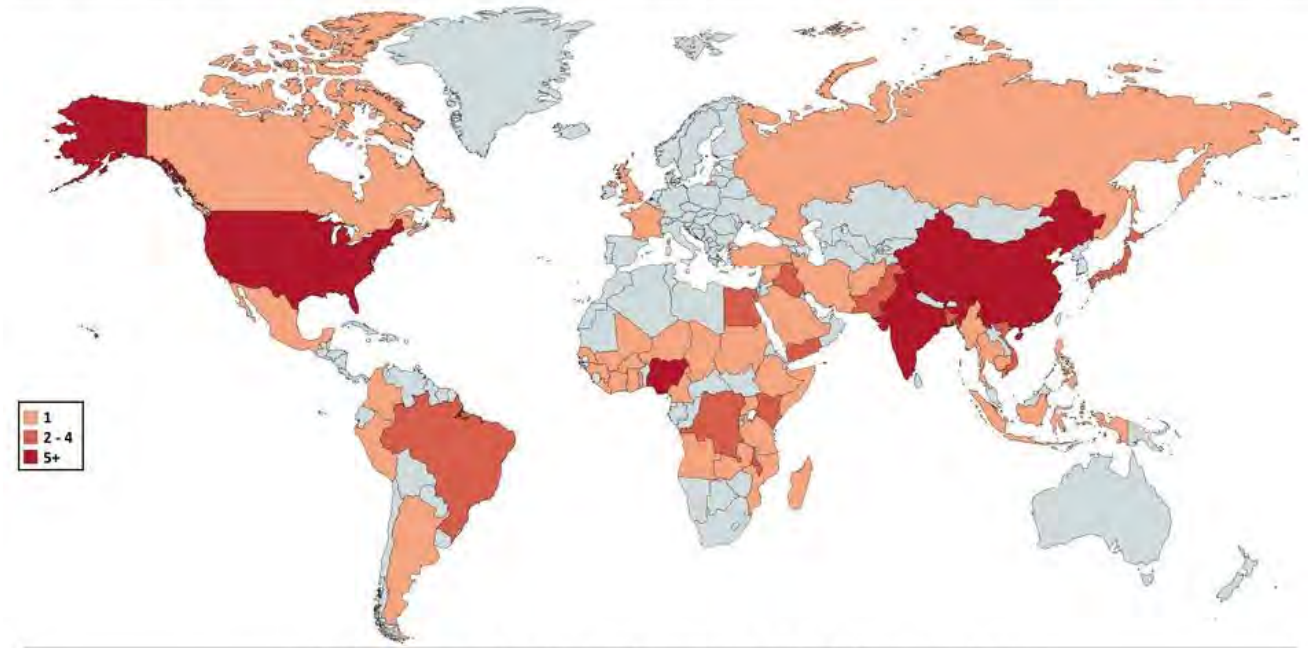
The Integration of Urban & Regional Sustainability Planning in Session's Cases							
Session Case	Type of Orgs. in **Session's Case** (intl, pblic, prvt, civil)?	US or Inter-national Case (Intl, US, etc.?	What is the Role of regional **(territorial) planning in Case's** Approach		What recommendation for Integration does the case present? (no, yes, how)?	What method and degree of integration in policy and practice does the case present?	What rationale for integration does the case present?
			What is the stated role?	What is the potential role?			
UN SDGs, esp. SDG 11 & NUA **Guidelines**							
Climate Response Case							
Biophilic City Planning & Design (BCP&D) Case							
Regional Planning Trends **Case**							



IMPLEMENTING
THE NEW
URBAN AGENDA

101 Largest Cities in 2100 - Number of Cities in Each Country

map_fanatic



TOP 15 LARGEST CITIES IN 2100 (in millions)

1. Lagos, Nigeria (88,3)
2. Kinshasa, DR Congo (83,5)
3. Dar es Salaam, Tanzania (73,7)
4. Mumbai, India (67,2)
5. Delhi, India (57,3)
6. Khartoum, Sudan (56,6)
7. Niamey, Niger (56,1)
8. Dhaka, Bangladesh (54,2)
9. Kolkata, India (52,4)
10. Kabul, Afghanistan (50,3)
11. Karachi, Pakistan (49,1)
12. Nairobi, Kenya (46,7)
13. Lilongwe, Malawi (41,4)
14. Bilantyre, Malawi (40,9)
15. Cairo, Egypt (40,5)

The path to Quito

Sendai Framework for Disaster Risk Reduction 2015.

Paris Climate Accords, 2015

Addis Ababa Accord on Financing for Development, 2015

Int'l Guidelines on Urban and Territorial Planning, 2015

Sustainable Development Goals, 2015

International Guidelines on Urban and Territorial Planning

April 2015

Published in 12 languages (105,000 downloads in English)

Urban Policy and Governance

UTP for Sustainable Development

- Social Development
- Sustained Economic Growth
- The Environment

UTP Components

- Spatial, institutional and financial over a variety of time frames and geographic scales

UTP Implementation

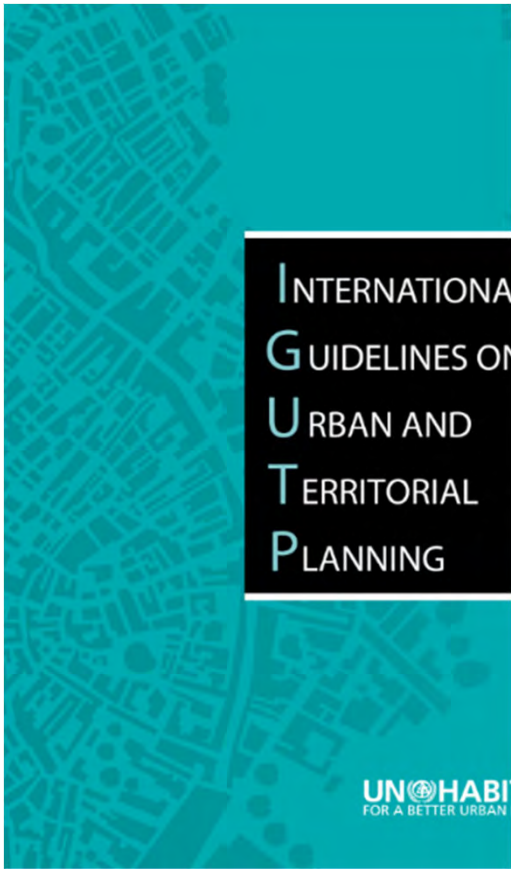
- Political leadership, legal/institution building, urban management, consensus building, capacity building and monitoring

Approved in 2015, **Resolution 25/6** of UN-Habitat's Governing Council.

A
multi-level
multi-stakeholder
multi-sector
approach to urban and territorial planning

3 enabling components

12	**114**	**5**	**4**
principles	action-oriented recommendations	levels	stakeholder groups



Guiding Principles: UTP…

..is an **integrative and participatory** decision-making process

promotes **local democracy**, participation, inclusion, transparency and accountability

aims to realize **adequate standards of living** and working conditions…and ensure equitable distribution of costs, opportunities and benefits of urban development

Is a **precondition for a better quality of life**

Is a catalyst for **sustained and inclusive economic growth**

promotes **better connectivity** at all territorial levels

protects and manages the **natural and built environment**

increases **human security**

is a continuous, **iterative process** grounded in enforceable regulations

translates political decisions into actions that will transform physical and social space

requires **political leadership**, legal and institutional frameworks, and efficient urban management

requires **continuous monitoring, sufficient capacities, and sustainable financial mechanisms**

(re)Connecting to Nature

Integrating Urban and Regional Sustainability Planning

APA International Division

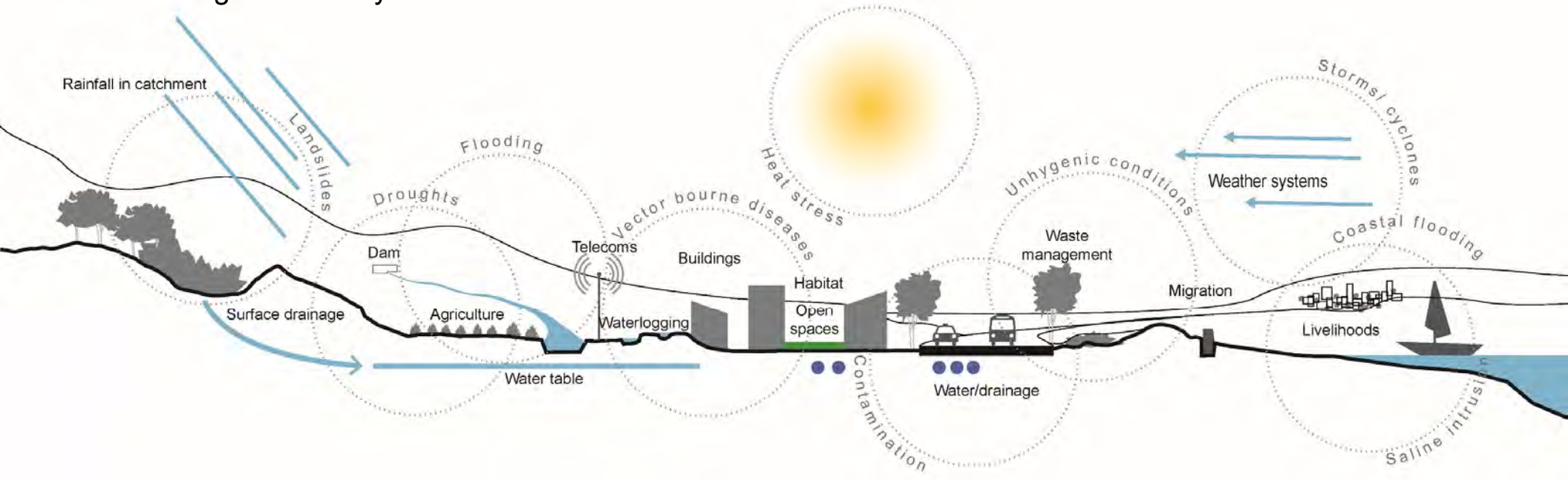
Vinny Riscica | Arup

October 11 2019

ARUP

CITIES RELY ON A COMPLEX WEB OF INSTITUTIONS, INFRASTRUCTURE AND INFORMATION

Their resilience depends on strengthening the capacities of individual systems in order to strengthen the city overall.



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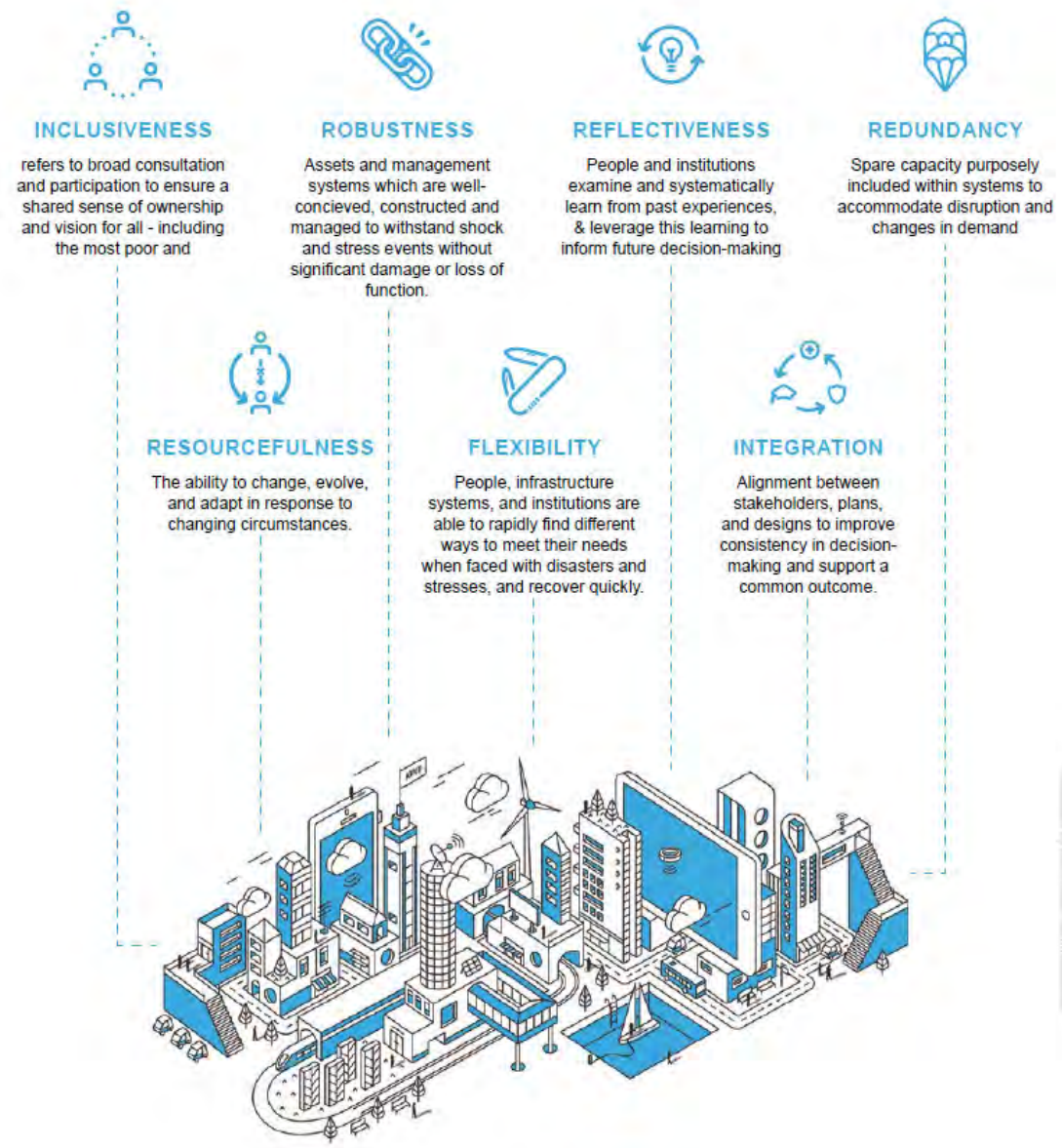
MANY OF WHICH ARE LOCATED OUTSIDE CITY BOUNDARIES

ARUP

AND THEY REQUIRE CERTAIN CHARACTERISTICS TO BUILD + MAINTAIN HEALTHY & STRONG PLACES



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MANY OF WHICH SPAN THE URBAN-RURAL ‘DIVIDE’

ARUP


foresight
Cities Alive
Rethinking green infrastructure
Cities Alive
Rethinking the Shades of Night
Towards a walking world
Cities Alive
Green Building Envelope
ARUP

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TO BUILD REGIONAL SUSTAINABILITY AND RESILIENCE WE MUST STOP IGNORING & FIGHTING ECOSYSTEMS

URBAN RESILIENCE

Integrated, well-enforced urban planning can help to reduce the impact of shocks and stresses on communities – for example, by preventing development in land-slide prone areas, by protecting riparian corridors for flood management, and by promoting community access to basic services, emergency evacuation and shelter.'

SUSTAINABILITY

Sustainable urban planning can provide a huge range of benefits including efficient urban mobility, protection of valuable natural habitat and resources, and healthy, safe communities.

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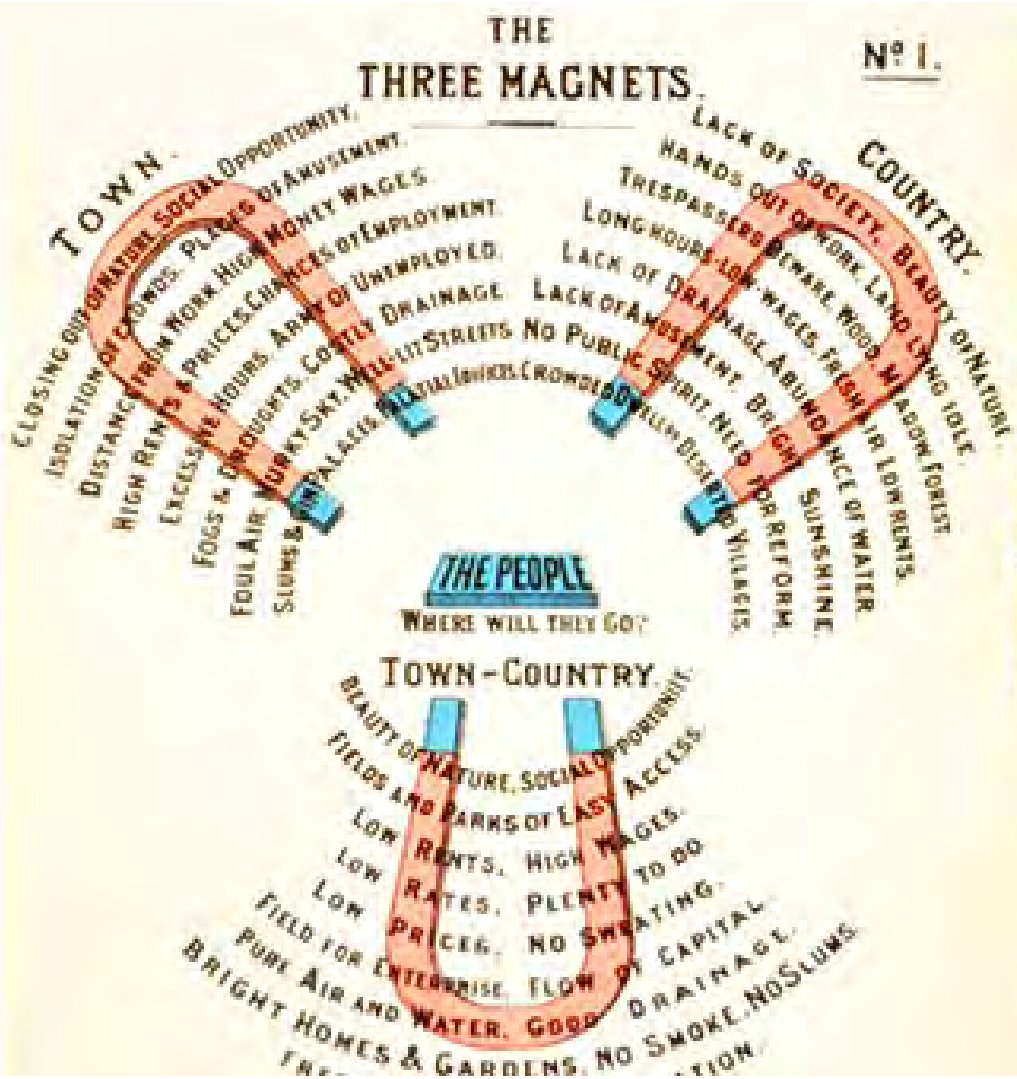
THIS CONCEPT ISN'T EXACTLY NEW…



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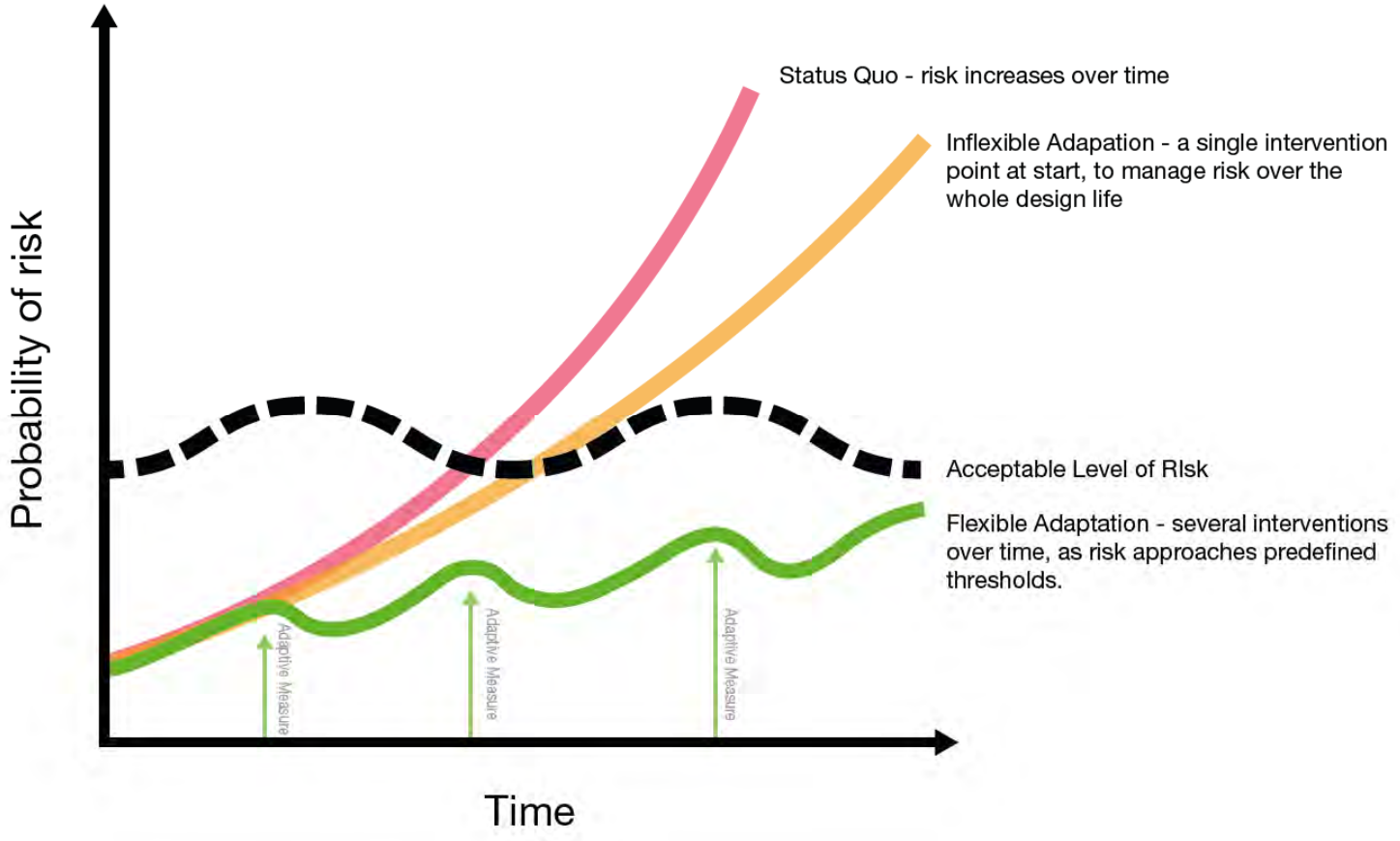
BUT IT TAKES ON A NEW IMPORTANCE IN THE AGE OF ATTACKING CLIMATE CHANGE

ARUP

WE NEED A HOLISTIC & TRANSPARENT APPROACH TO RESILIENCE



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SO WHAT ARE WE DOING ABOUT IT?

100 Resilient Cities
NY Rising
Rebuild by Design
Resilient by Design
Chengdu Sponge City
Narbethong Community Resilience

LEARNING FROM CITIES

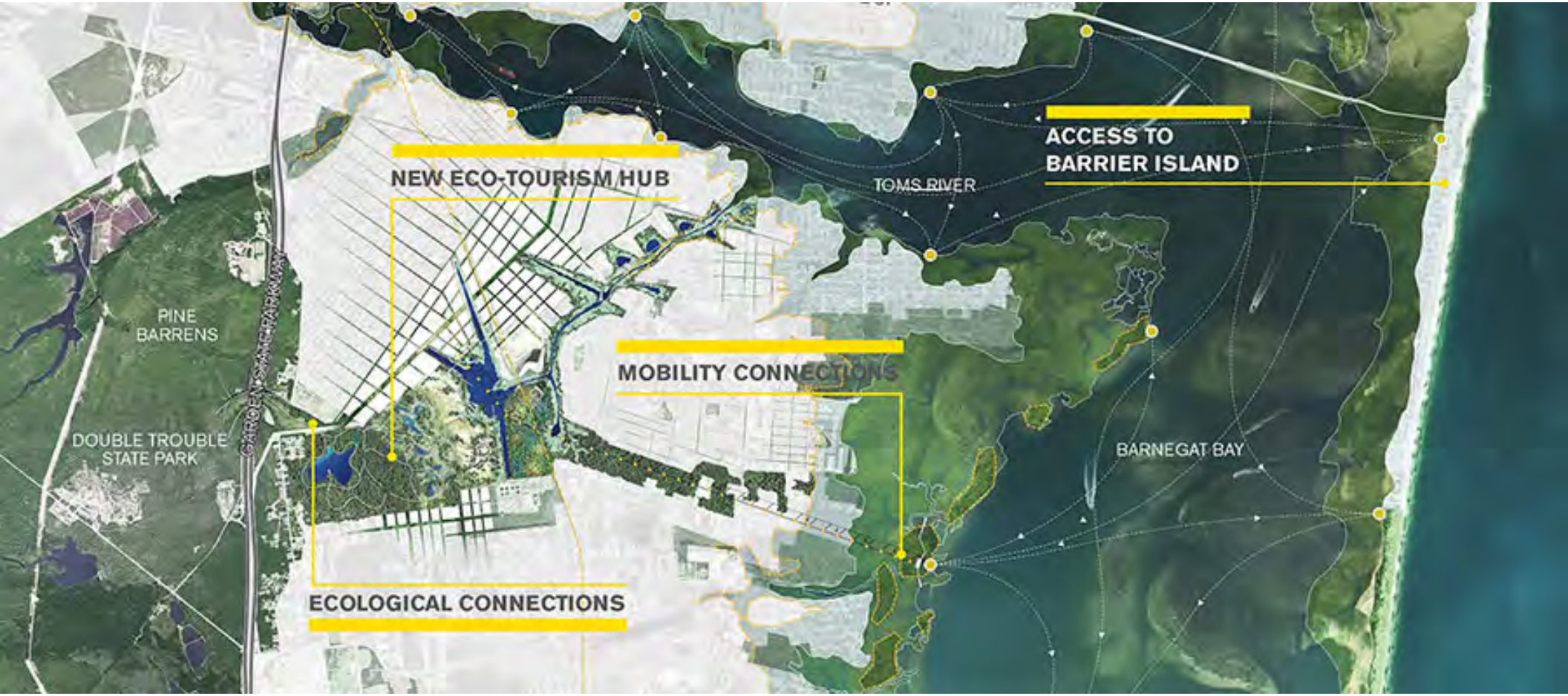
Photo © 100 Resilient Cities

100 Resilient Cities | NY Rising | Rebuild by Design | Resilient by Design | Chengdu Sponge City | Narbethong Community Hall

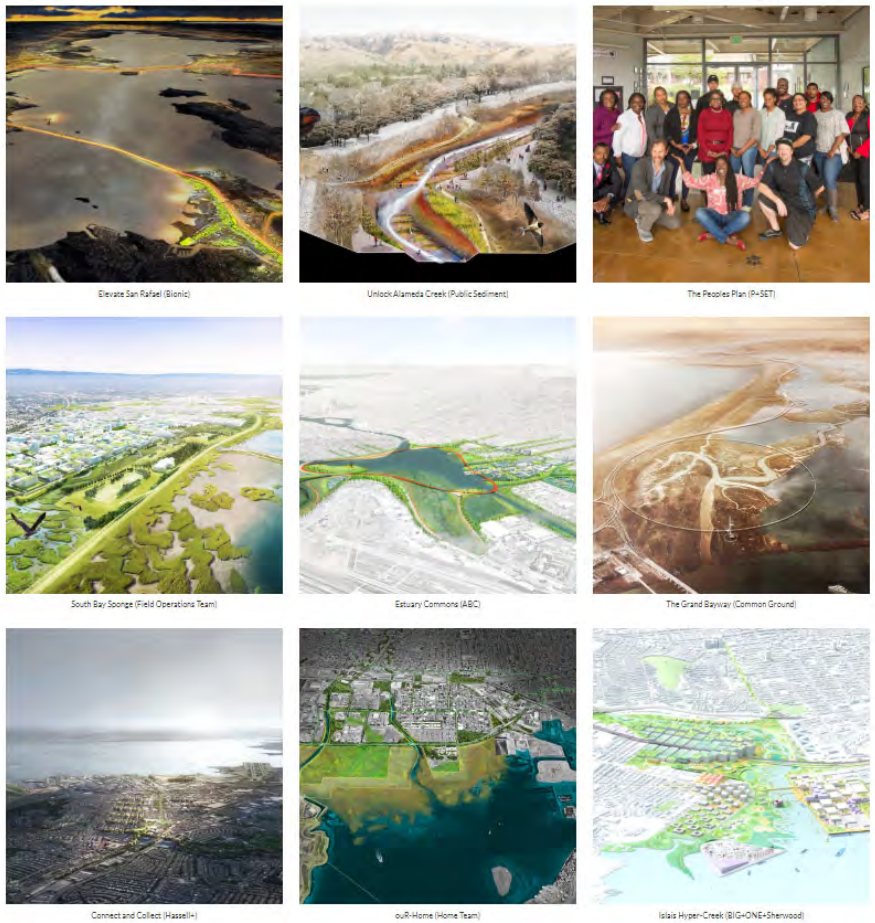
ARUP

LOOKING BEYOND HUMAN-MADE BOUNDARIES

CONNECTING COMMUNITIES



PLANNING FOR PEOPLE



100 Resilient Cities | NY Rising | Rebuild by Design | Resilient by Design | Chengdu Sponge City | Narbethong Community Hall

ARUP

DESIGN PERFORMANCE: FLOODABLE OPEN SPACE

Dry Season

Wet Season

REFLECTIVE RECOVERY

Source: BVN

100 Resilient Cities | NY Rising | Rebuild by Design | Resilient by Design | Chengdu Sponge City | Narbethong Community Hall

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KEY TAKEAWAYS

- Nature as a stakeholder, not an after thought
- Elevating community voices and needs
- Understanding history
- Layering in future design needs
- Building on existing assets

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APA Webinar: Integrating Urban and Regional Sustainability Planning

The Case of Biophilic City Planning

Scott T. Edmondson, AICP
SF Planning | A Founding Partner City of the Biophilic Cities Network

APA Webcast Series | Sponsor: APA Chapters & Divisions | October 11, 2019, 2-3:30 ET

Key Question: Do we need to i*ntegrate Urban & Regional Sustainability Planning for Success?*

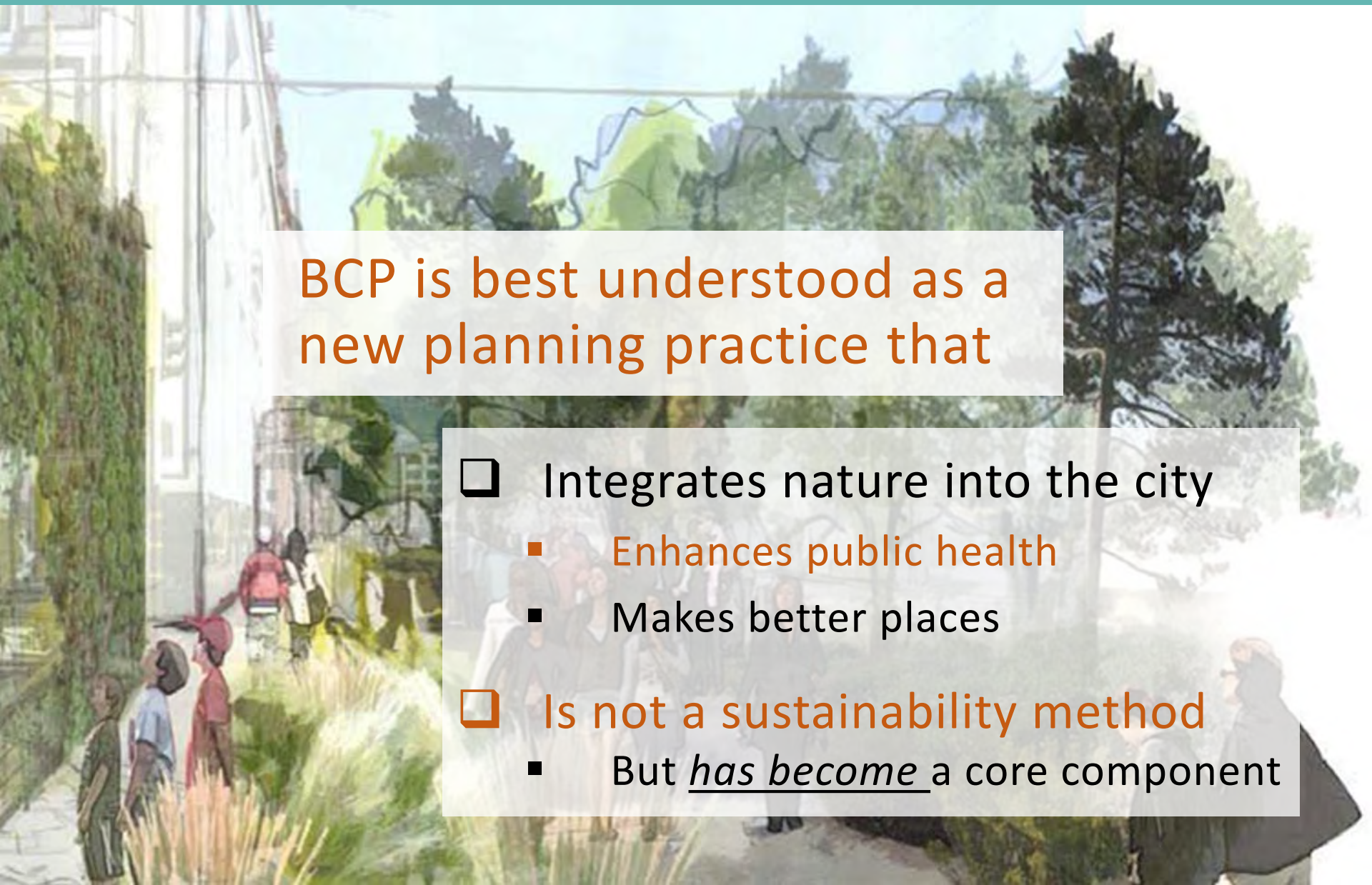
With a New Regional Agenda (NRA) and
Sustainable Development Goal (SDG) No. 18 to . . .

MAKE CITY-REGION HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

AGENDA

1. Introduction
2. Description
3. Practice
4. Regenerative Urbanism
5. Conclusion

1. INTRODUCTION



BCP is best understood as a new planning practice that

- Integrates nature into the city
  - Enhances public health
  - Makes better places
- Is not a sustainability method
  - But *has become* a core component

Context: Expanding Challenge

- A higher bar from UN Habitat III NUA & SDGs without new tools
- Accelerating unsustainability
- An emerging question
  - Will current practice get the job done?
- If not, what's a Planner to do?
  - What's the next big sustainability step?

Fortunately, the response is emerging

organically in innovation occurring across our professions

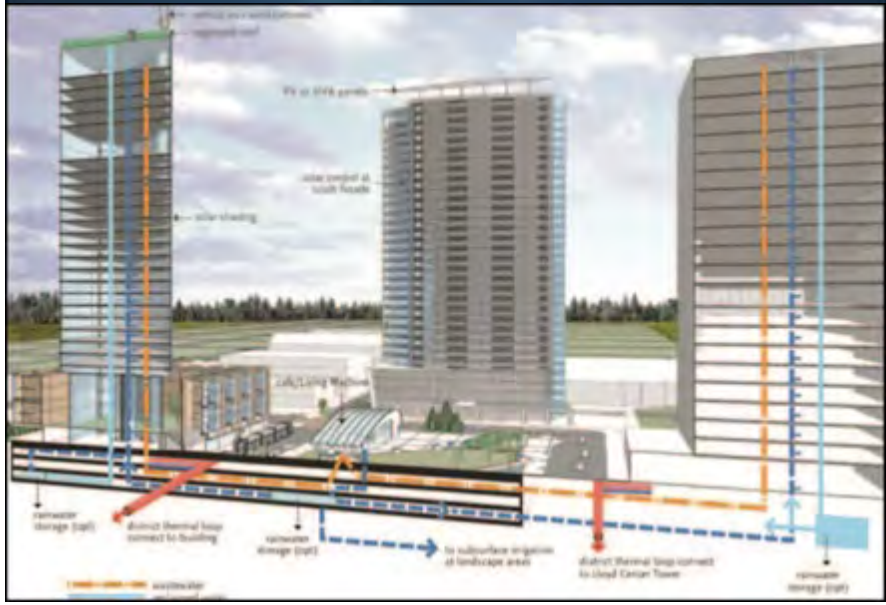
Planning | **High-performance places (**Eco-Districts, -Cities, -Regions); **Biophilic Design & Planning,** Health & Land Use

Urban Design | **Adding water & habitat (biophilia)** for next-generation place making & metabolic integration for high perf.

Architecture | **2030 Challenge, NZE+T** (transportation), **Living** Buildings / Walls / Roofs, and **Passive House** building technology

Landscape Architecture | **From aesthetics to habitat cultivation** (Biodiversity) & **human health (Biophilic design)**

Utilities | **Shift from gray to green** is underway, and even to **living infrastructure**, a **new concept of urban metabolism**



Regenerative Urbanism has moved from theory to practice

with cities advancing it with bold, innovative projects & plans

REGENERATION

BURNABY, BC. Adopting an Environmental Sustainability Strategy that anchors an integrated, regenerative, and net positive community vision

IT / SMART CITY

KASHIWA-NO-HA, JAPAN. Managing a comprehensive Smart City program that enhances environmental performance and social cohesion

ENERGY

VANCOUVER. Leading a comprehensive Renewable City Strategy committed to 100% renewable supply (including transport) using neighborhood energy utilities

MOBILITY

VIENNA. Providing a coordinated network of emissions-free transit options that eliminate the need for personal automobiles

WATER

BARANGAROO SOUTH DISTRICT, SYDNEY
Utilizing an integrated district water system that exports surplus recycled water to surrounding communities

LAND USE + ECOSYSTEM

SINGAPORE. Employing a 'livable density' approach that integrates the built environment within natural systems

MATERIALS + WASTE

AMSTERDAM. Designing a local circular economy to eliminate waste, create jobs, and anchor new district developments

HEALTH + WELLBEING

CHICAGO. Leading a comprehensive wellbeing assessment that embeds health equity into every government agency

FOOD

SUNQIAO DISTRICT, SHANGHAI
Integrating large-scale vertical farming systems within the public realm to expand regional foodshed capacities

MGMT + GOVERNANCE

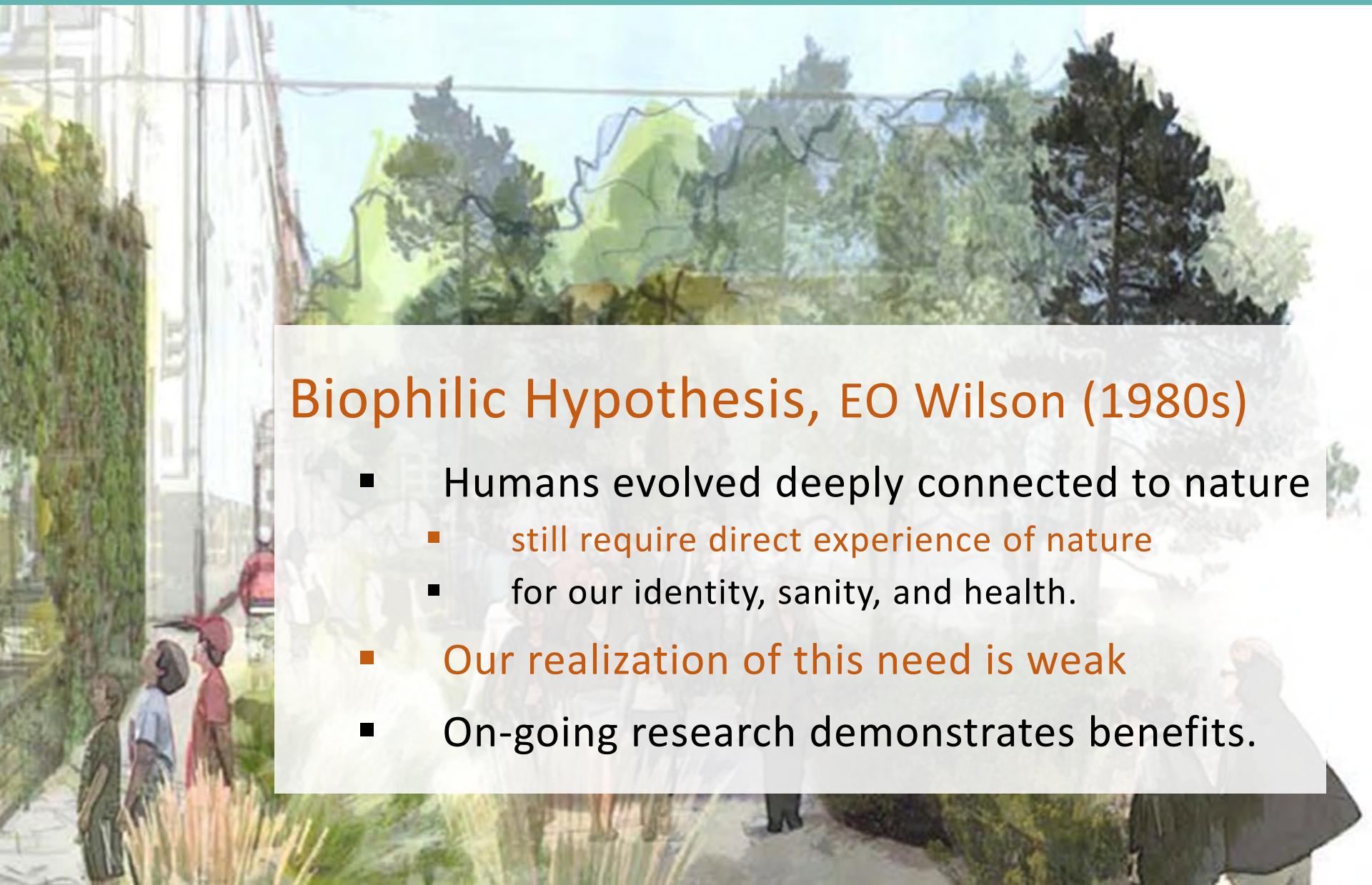
COPENHAGEN. Using an innovative public-private model to finance large-scale community regeneration projects

SF Planning, Draft Consultant Report – Internal Use Only, 2018

2. DESCRIPTION

What is Biophilic City Planning (BCP)?

BCP arose over the past 40+ years

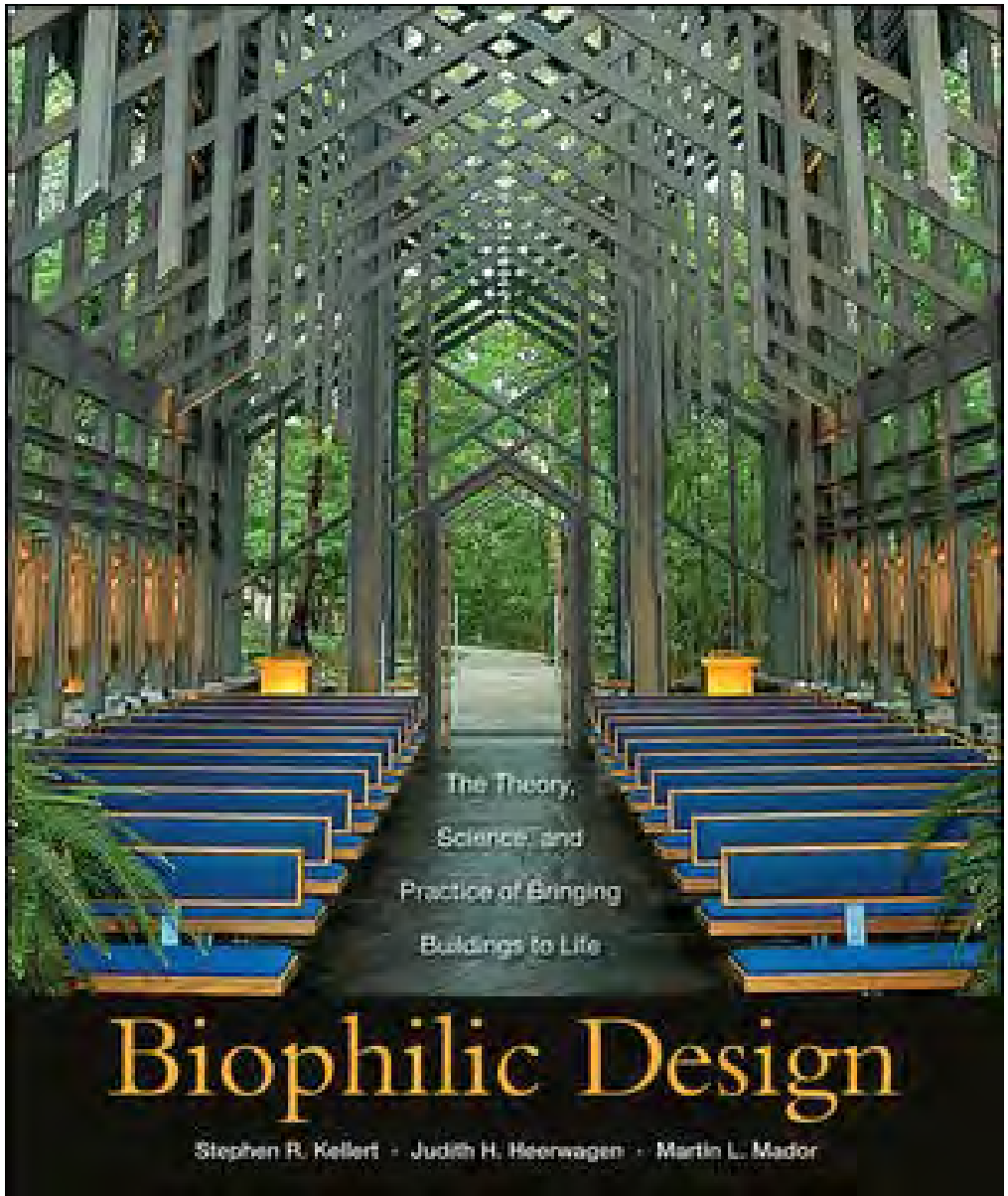


Biophilic Hypothesis, EO Wilson (1980s)

- Humans evolved deeply connected to nature
  - still require direct experience of nature
  - for our identity, sanity, and health.
- Our realization of this need is weak
- On-going research demonstrates benefits.

Biophilic Design (1990s+)

Stephen R. Kellert, Judith Heerwagen, Martin Mador (2008)



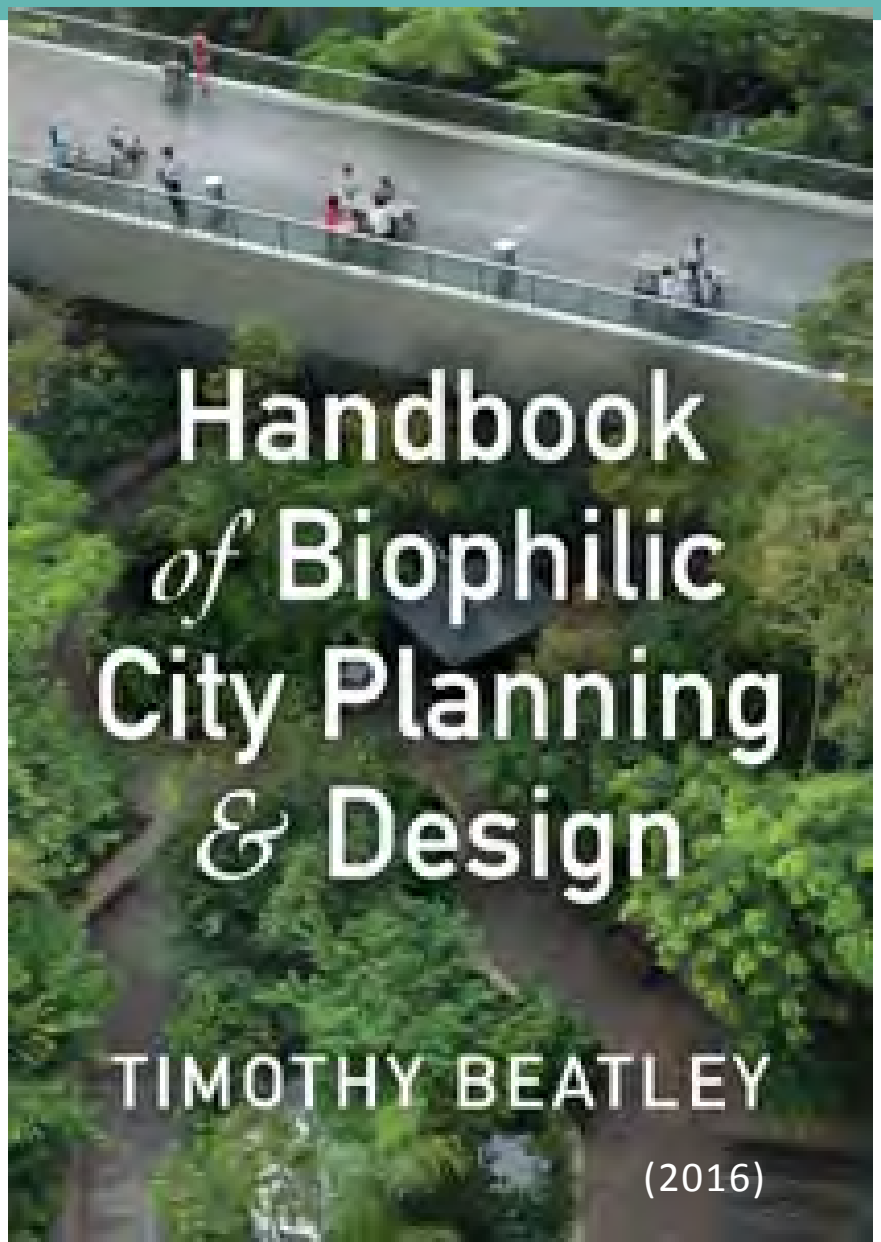
The Theory, Science and Practice of Bringing Buildings to Life

Why? New source of well-being and

- Humans spend 80% of their time in buildings!
- Humans intrinsically attracted to nature
- Need contact for well being and development

Extended to city planning & design (2000s+)

Professor Timothy Beatley, University of Virginia



To integrate nature deeply into the city!

WHY? Because people need meaningful encounters with nature for public health and well being beyond what planning and cities typically provide.

The Four Pillars of Biophilic Cities

1. Abundant nature
   - in the city & infrastructure
2. Pervasive citizen engagement
   - with nature
3. A deep “nature” culture
   - knowledge and values
4. Strong Biophilic Institutions
   - Budgeting & Governance
   - Support & reflect those values

Beatley, Biophilic Cities, 2011

Biophilic Urban Design Elements Cross Scales

Planning and design needs to address integration across boundaries

SCALE	ELEMENT
Building	Green rooftops Sky gardens & green atria Rooftop gardens Green walls Daylit interiors
Block	Green courtyards Clustered housing around green areas Native species yards & spaces
Street	Green streets Sidewalk gardens Urban trees Low-impact development Vegetated swales & skinny streets Edible landscaping High permeability

SCALE	ELEMENT
Neighbor-hood	Stream restoration Urban forests Ecology parks Community gardens Parks & pocket parks Restored brownfields
Community	Urban creeks Urban riparian areas Urban ecological networks Green schools City tree Canopy Community forest/orchards Greening utility corridors
Region	River systems & floodplains Riparian systems Greening major transport corridors

Beatley, Biophilic Cities, Box 4.2, p 84, 2011

Biophilic design uses nature's forms, materials,

& views to create inviting & strangely familiar places

that are comfortable & subtly attract us!

That draw us in!

Characteristics of Biophilic Neighborhoods

- Connect People to Nature
  - Streets, pathways & trails
  - Neighborhood
  - City
  - Region
- Water: aesthetics/function
  - a remnant creek or stream,
  - water body to visit
- Abundant Nature
  - sidewalks gardens
  - yard farms
  - backyard wood lots
- Edible landscaping

- Abundant green areas
  - exploring, playing , gathering
- Camping areas
- Tree houses
- A nature center
  - nature experts give talks
  - & lead walks
- Lending Libraries
  - Nature equipment, s.a.,
    - field guides
    - Binoculars
    - Microscopes, etc.

Beatley, Biophilic Cities, Box 4.2, p 104, 2011

Produce Biophilic Neighborhoods & Cities Full of Nature

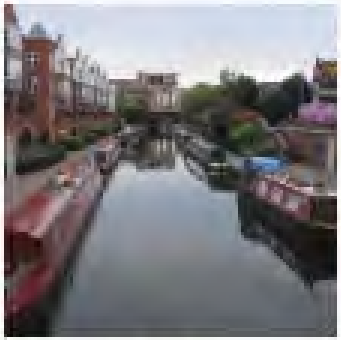
They invite activity, exploration, relaxation, contemplation


NOT the case where nature is absent

The Biophilic Cities Network

A growing global network of cities advancing biophilic city planning & design

Austin, Texas



Birmingham, UK

Curridabat, Costa Rica

Edmonton, Canada

Wellington, New Zealand

Fremantle, Australia

Milwaukee, Wisconsin

Phoenix, Arizona

Pittsburgh, Pennsylvania

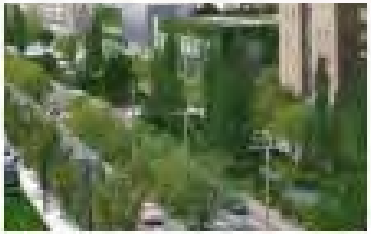
St. Louis, Missouri

Portland, Oregon

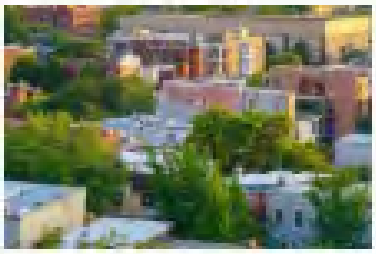
Reston, Virginia

San Francisco, California

Singapore



Vitoria-Gasteiz, Spain



Washington, DC

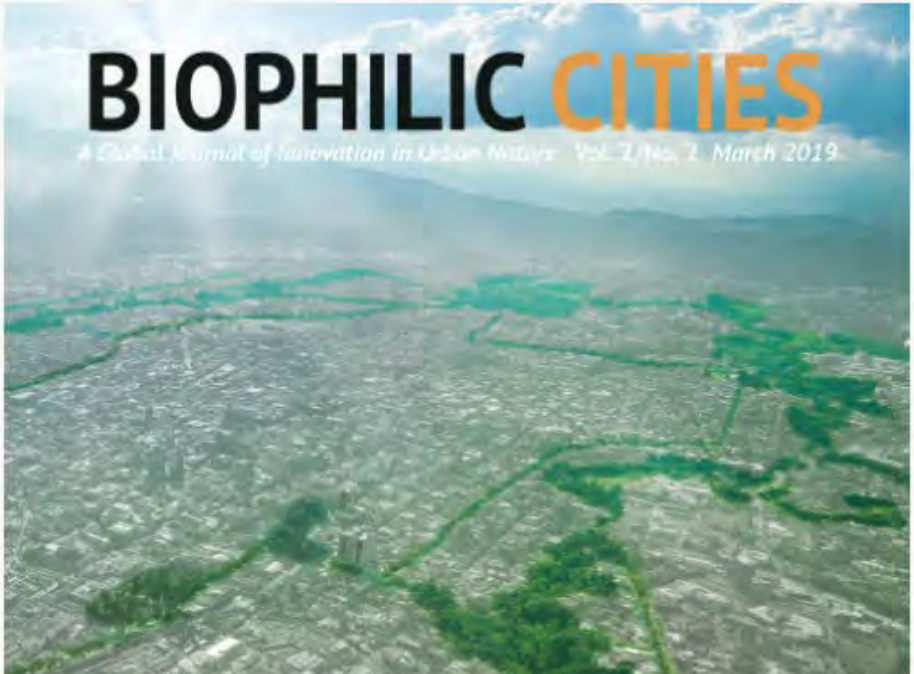
The Biophilic Cities Network Journal

https://www.biophiliccities.org/

BiophilicCities

ABOUT THE NETWORK JOURNAL FILMS RESOURCES

BIOPHILIC CITIES JOURNAL



Consider BCP as one new tool to address the

Higher "planning" bar of the NUA, SDGs, & sustainability success

- ❑ Its approach is integrative & cross-scale
- ❑ It supports this session's proposition:
  - Needing to integrate urban & regional planning for sustainability success.

3. EXAMPLES

Can see BCP in SF Planning's projects

- Partner City of Intl. BC Research Prog.
- Partner in SFE's Biodiversity Program
- Urban Forest Master Plan
- Green Connections Plan
- BC Program Development Proposal
- Living Community Patterns
- Regenerative City Assessment

International Biophilic Cities Research Project

Professor Timothy Beatley

U. of Virginia, 2011-2013

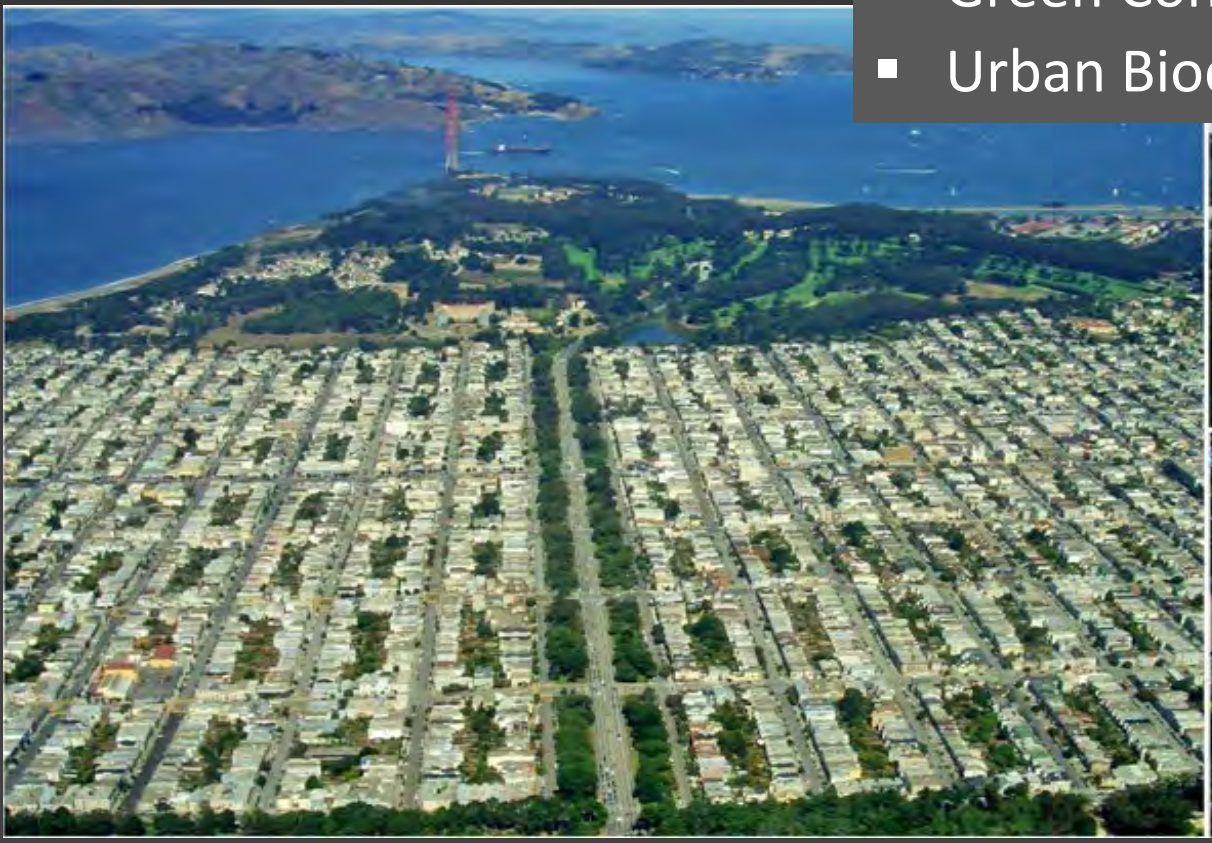
Biophilic SF

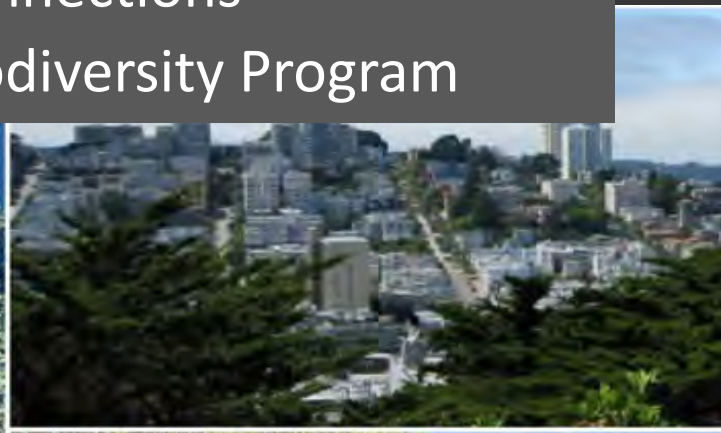
Topics

Existing Nature & Programs

Integrating Nature and Planning

- Signature Projects
- Urban Forest Master Plan
- Green Connections
- Urban Biodiversity Program





SFEs Biodiversity Program

Goals Reflect Four Pillars of Biophilic Cities

Launched program (2013)

- Expanded from restoration to nature in the city
- Expanded focus from ecological restoration to constructing nature in the built environment (Goal 4)
- Defense against the new-normal of climate extremes

GOALS create a city that :

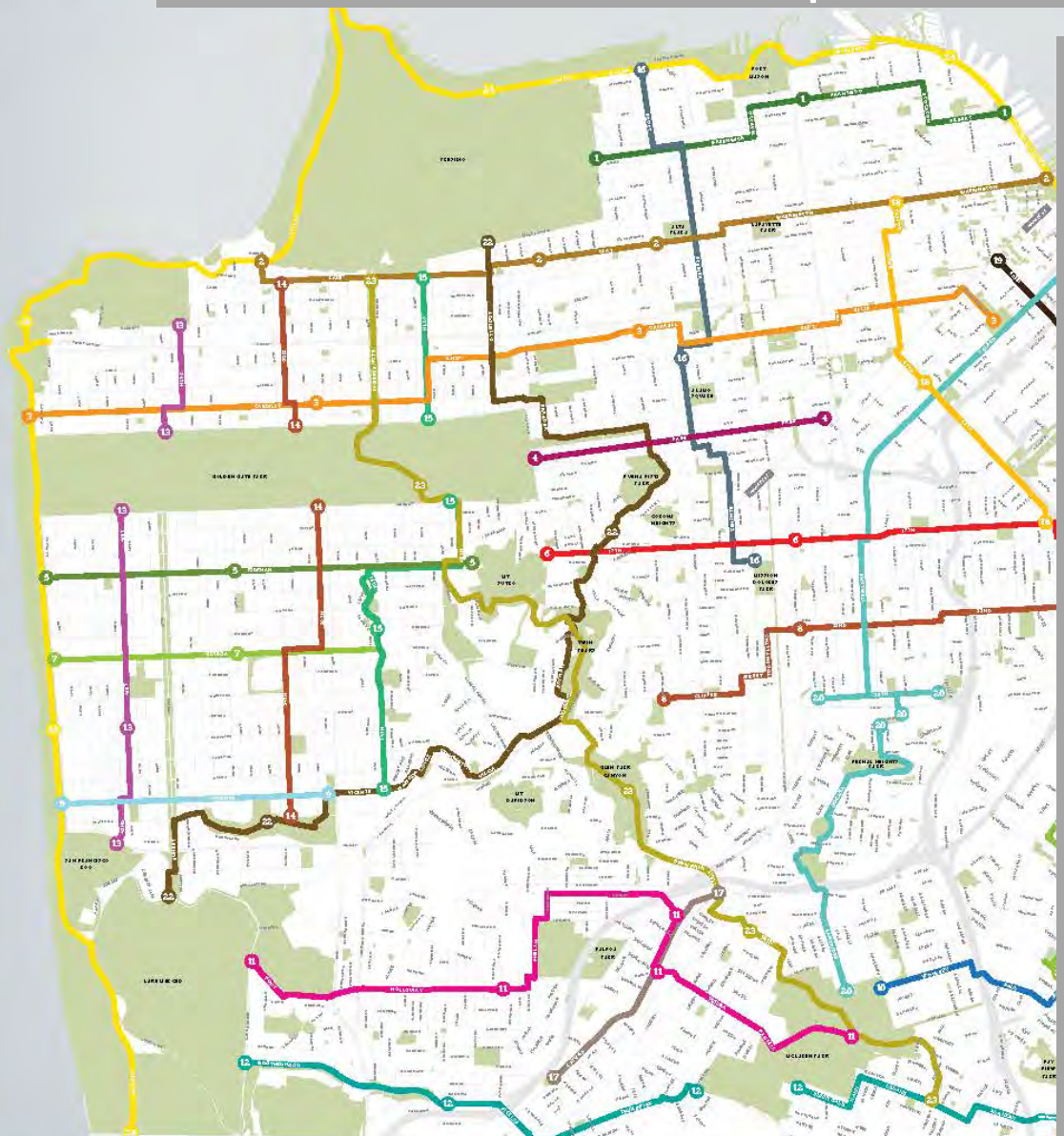
1. Restores & Maintains Biologically Rich Ecosystems
2. Connects people with nature every day
3. Empowers people to add nature to all neighborhoods
4. Construct high-value habitat in the built environment.
5. Uses ecosystem services so SF is a climate-protected and ecological city.

An Urban Forest includes:

Private Trees	+Understory:	Maintenance
Street Trees	Shrubs	Green Roofs/Walls
Park Trees	Sidewalk Gardens	Wildlife

An Experiment: can we reproduce the aesthetic qualities, dynamic functions, and ecosystems services of a forest in cities for greater value and better places?

Created a 24-Route Network each with a different habitat & species brand



Green Connections:

- directly connect
- people to nature
- by designing linear habitat
- along pedestrian & bike routes
- between residential & job centers
- and restored natural areas
- integrated with regional habitat.

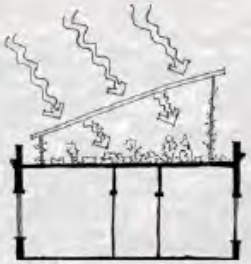
Joint SF Planning/ILFI research project under Living City Grant

Question: How to make existing neighborhoods sustainable?

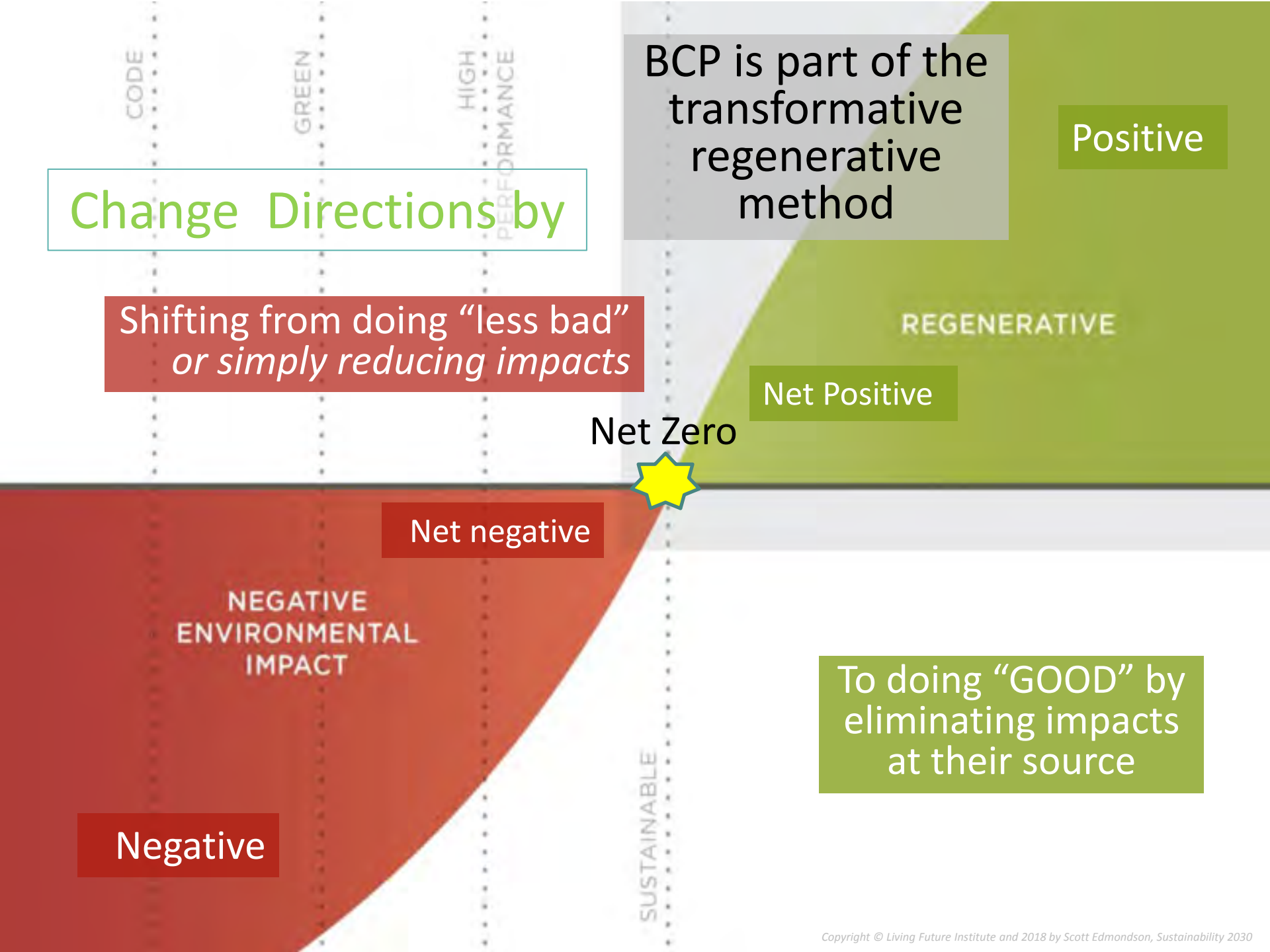
LIVING COMMUNITY PATTERNS

EXPLORATORY STRATEGIES FOR A SUSTAINABLE SAN FRANCISCO

A method for integrating local-regional sustainability planning



INTERNATIONAL LIVING FUTURE INSTITUTE



Shift from goals to living system imperatives (ILFI Living Community Chall)

PLACE
RESTORING A HEALTHY COEXISTENCE WITH NATURE

WATER
CREATING WATER-INDEPENDENT SITES, BUILDINGS AND COMMUNITIES

ENERGY
RELYING ONLY ON CURRENT SOLAR INCOME

HEALTH & HAPPINESS
MAXIMIZING PHYSICAL AND PSYCHOLOGICAL HEALTH AND WELL-BEING

MATERIALS
ENDORSING PRODUCTS AND PROCESSES THAT ARE SAFE FOR ALL SPECIES THROUGH TIME

EQUITY
SUPPORTING A JUST, EQUITABLE WORLD

BEAUTY
CELEBRATING PLANS THAT PROPOSE TRANSFORMATIVE CHANGE

Shift from goals to living system imperatives (ILFI Living Community Chall)

PLACE
01. Limits to Growth
02. Urban Agriculture
03. Habitat Exchange
04. Human Powered Living

WATER
05. Net Positive Water

ENERGY
06. Net Positive Energy

HEALTH & HAPPINESS
07. Civilized Environment
08. Healthy Neighborhood Design
09. Biophilic Environment
10. Resilient Community Connections

MATERIALS
11. Living Materials Plan
12. Embodied Carbon Footprint
13. Net Positive Waste

EQUITY
14. Human Scale + Humane Places
15. Universal Access to Nature & Place
16. Universal Access to Community Services
17. Equitable Investment
18. Just Organizations

BEAUTY
19. Beauty + Spirit
20. Inspiration + Education

Biophilic Planning & Design

PATTERNS: Are Sustainability Creativity Pl&D Strategies

to achieve multiple sustainability systems imperatives simultaneously

PETALS

The Petals of the Living Community Challenge represent seven performance areas: Place, Water, Energy, Health, Materials, Equity, and Beauty—that together produce the system conditions of a restorative future.

IMPERATIVES

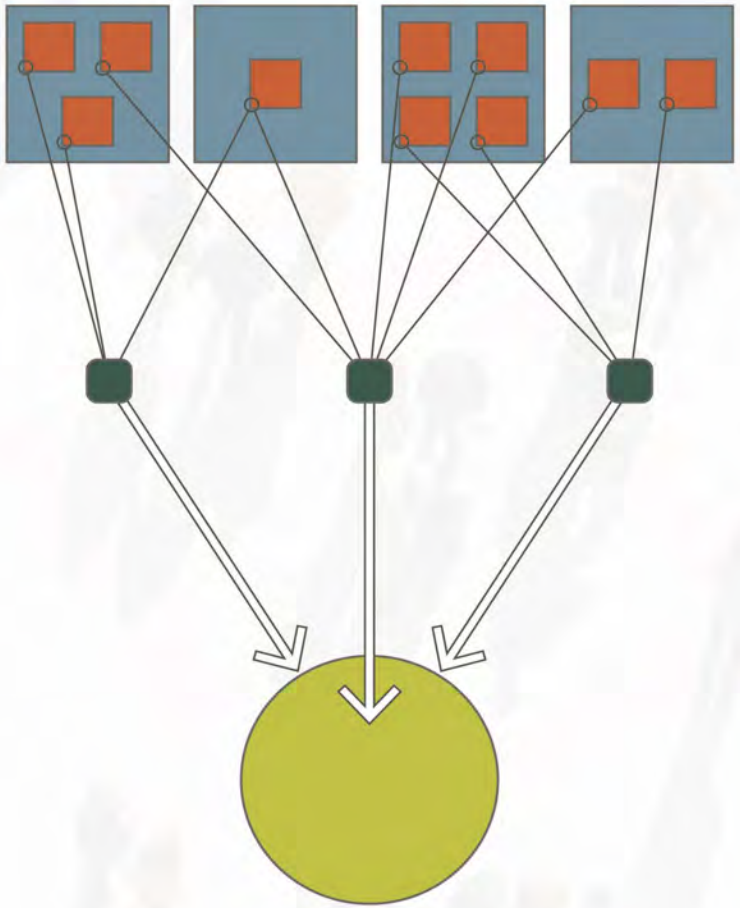
From the Petals, the Imperatives define the specific performance metrics of success.

PATTERNS

Patterns are strategies, concepts, and templates to create projects that culminate in Living Communities.

PROJECTS

The Petals, Imperatives, and Patterns can be used to design projects that create Living Buildings and Living Communities.



PATTERN 01
URBAN REWILDING

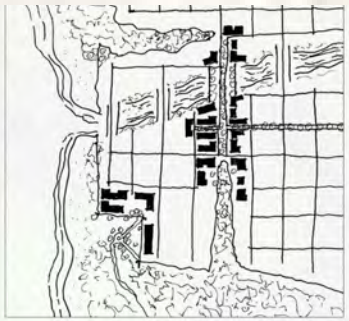
Description:

COMMUNITIES SHOULD INTEGRATE NATURE, INCLUDING WILD NATURE, INTO THEIR BUILT ENVIRONMENTS THROUGH A NEW

Image Source: Baron Reznik

Description:

COMMUNITIES SHOULD INTEGRATE NATURE, INCLUDING WILD NATURE, INTO THEIR BUILT ENVIRONMENTS THROUGH A NEW SYNTHESIS OF RESTORATION ECOLOGY, ARCHITECTURE, AND URBAN PLANNING AND DESIGN People need frequent contact with

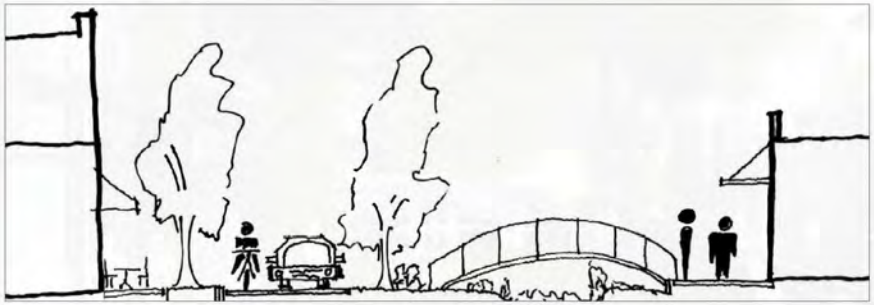


city's indigenous ecology is re-created, in turn promoting native biota and insects. Wild corridors should be re-created through the city, allowing wild reptiles, mammals, and birds to reclaim habitat and have a presence. Wilderness in the city also allows all people to experience nature, not just those who have the means to leave the city to travel to distant wild places.

PATTERN 04
BLUE-GREEN STREETS

Use water and habitat for aesthetics, urban activation, ecosystem services

Description:



SOME STREETS CAN BE REBUILT AS NEW, MULTI-FUNCTIONAL PLACES OF WATER COLLECTION AND STORAGE, BIOPHILIA, RECREATION, WASTEWATER TREATMENT, AND OTHER ECOSYSTEM SERVICES. The Blue-Green Street integrates stormwater flows, natural

of large shrubs and tree groves is possible, providing a cooling microclimate on hot days. A Blue-Green Street can be integrated into many street types, from boulevards to neighborhood streets, and from alleyways to bike paths. The result is places that are much more people-centric and biophilic.

NOE VALLEY ILLUSTRATIVE PLAN

Street-to-Table
The 20'+ sidewalk on Dolores Street lends itself to a large planting strip that could incorporate urban agriculture

Car Share Parking + Grower/ Maker Space
5 parking spaces for Mobility in the Middle sized automobiles are created at the northern end of the street which could include a charging station partially powered by the Grower/Maker Space solar array. This community building is sized to host a tool-share or gathering place.

Blue-Green Street II
These linear rain gardens on 22nd and 23rd Streets will store rainwater during a significant rain event from the north and south sections of Fair Oaks

Blue-Green Element
Though the 10' ROW along Quanes Street does not allow for Blue-Green elements within the ROW, there are opportunities for public/private partnerships to create rainwater capture gardens.

Blue-Green Street Alley
Ames Street has a 15' ROW that can be reconfigured to include a travel lane and planting areas while preserving garage access.

Reconfigured Circulation
This circulation loop allows the Adda Clevenger School to maintain access, parking, and a pick-up/drop-off loop.

Improved Crosswalk
Crosswalks at major junctions throughout the Blue-Green network should be clear designated through paint, thermoplastic, or pavers.

Blue-Green Street II
The north and south sections of Fair Oaks can incorporate Blue-Green elements by removing a lane of parking. These elements will incorporate Coriolis features to sculpt the water as it descends down the hill.

Street I
Blue-
mpletely
ROW to
ace/path
neable
reen
ark-like
cafe
e courts.
cular access
is preserved on the eastern edge with movable bollards on the north and south ends.

Place-Based Memory
This existing art-wall on Ames Street is a rotating installation with positive messages by long-term residents of the alley.

Enhance neighborhood sustainability with regenerative living system urban design

using blue-green streets and other living community patterns

to transform existing neighborhoods for sustainability success.

4. REGENERATIVE URBANISM?

- Do these examples add up to more than biophilic city planning & design?
- The larger emerging theme & principle: ***"regenerative" systems performance***
  - New integrative frame for sustainability?
  - For integrative urban/regional planning?
  - With biophilic city planning & design a key

Regenerative City Assessment

REGENERATIVE SAN FRANCISCO

Phase 1 - Explorations and Proposal for Action

Tested New Approach on a Plan Area

Prepared on March 15, 2018

Prepared For: San Francisco Planning

Prepared By: ecala

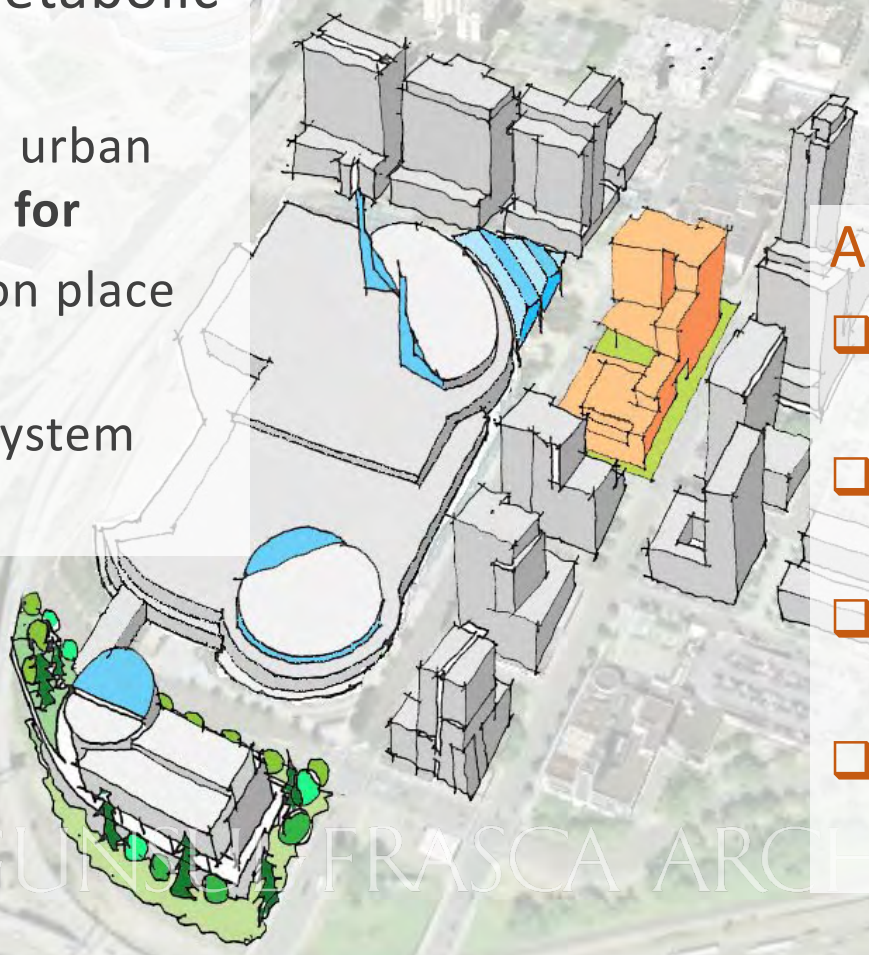
With Support From: ZGF ZIMMER GUNSUL FRASCA ARCHITECTS LLP; URBAN FABRICK

New Regenerative Urban "System" Design "Palette"

To design the integrated layers of regenerative systems perform

Add water & habitat (biophilia) **+** metabolic integration to

- ❑ the traditional urban design palette **for**
- ❑ next-generation place making &
- ❑ regenerative system performance



A new synthesis:

- ❑ restoration ecology
- ❑ urban design, planning & policy
- ❑ Landscape Architecture
- ❑ Engineering

Scott Edmondson, SF Planning &
Charles Kelley, ZGF Architects, Inc.

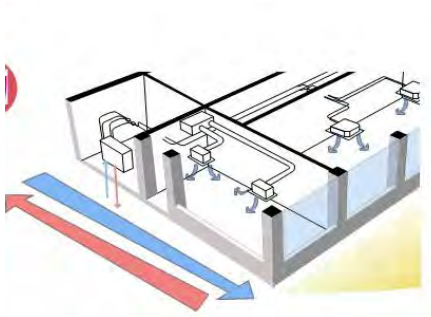
Four Big Regenerative District Ideas

Essentially, it is "bio'*system*'mimicry," writ large

Set of cross-district urban design improvements produce multiple benefits

- Big Idea 1: District water for cooling and heat exchange
- Big Idea 2: Coordinated Blue-Green Biophilic Infrastructure
- Big Idea 3: Connecting across scales (buildings, blocks, districts, cities, regions)
- Big Idea 4: Circular economy to create regenerative urban metabolism

They build a transformational value proposition: Biophilia, Healthy Choices, Social Mobility, Sustainability, and Resiliency.



Heat Pump

Black Water Treatment

Heat Sink

Recycled Water

BUT, it's more than city + environment

We unwittingly build the spatial sustainability economy

From a regeneratively

- planned
- designed and
- functioning

built environment: i.e., *The Regenerative City-Region*!

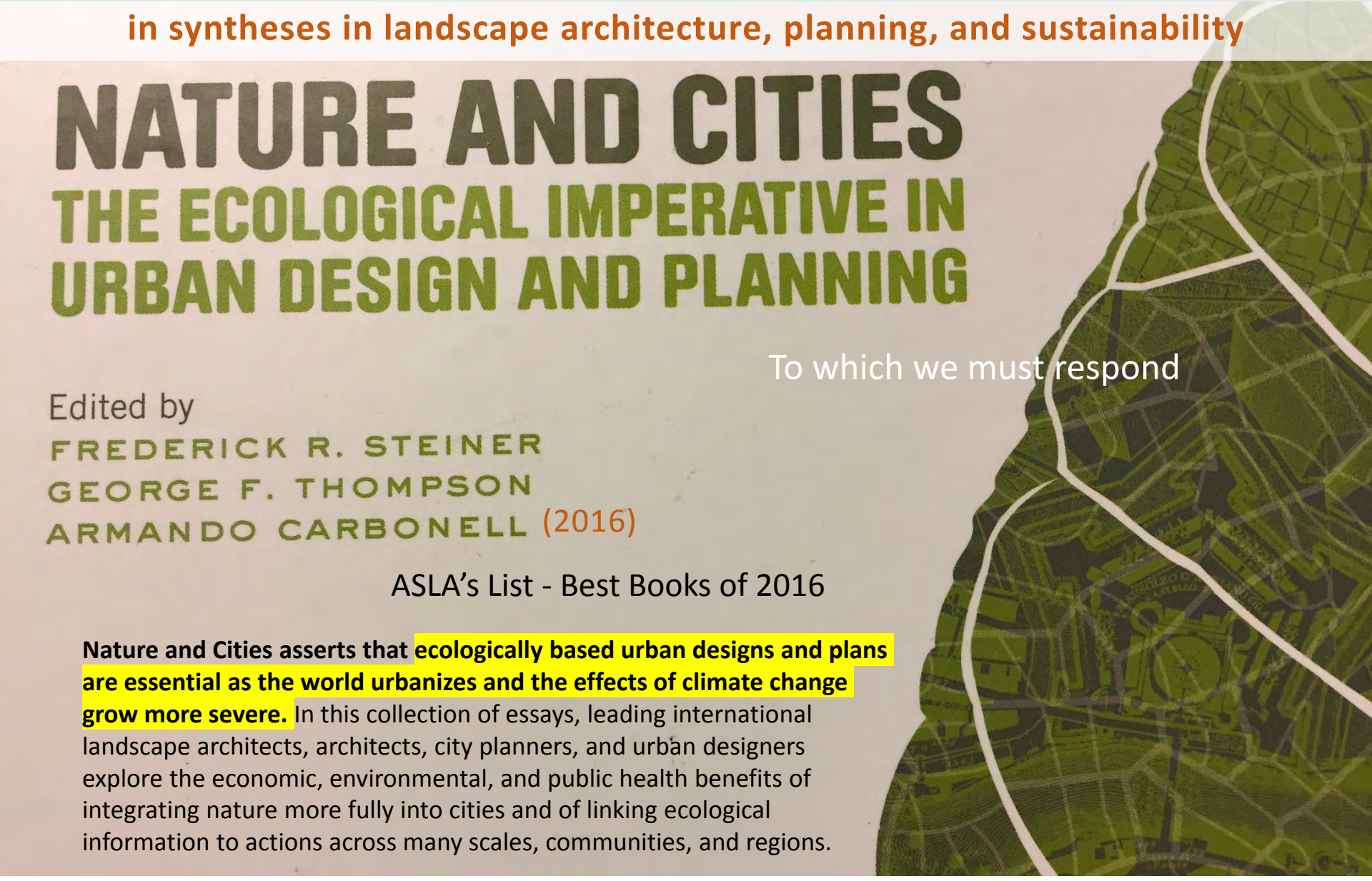
RU's Economic Connection Expands the

Value Proposition of our Professions

- Game-changer for Planning, D, Enviro., Sust.
- FROM being a **nice-to-have aesthetic** value creator
- TO being a **must-have economic** value creator
  - Enabler of the sustainability economy that is
  - the necessary basis for sustainable cities (etc.)
- RU is the source code of sustainability success
- Planning becomes the lead, the guide.

Idea is emerging full force in the literature

in syntheses in landscape architecture, planning, and sustainability



To which we must respond

ASLA's List - Best Books of 2016

Nature and Cities asserts that ecologically based urban designs and plans are essential as the world urbanizes and the effects of climate change grow more severe. In this collection of essays, leading international landscape architects, architects, city planners, and urban designers explore the economic, environmental, and public health benefits of integrating nature more fully into cities and of linking ecological information to actions across many scales, communities, and regions.

Key Ideas from Nature & Cities

Alternative [Ecological Planning &] Design Practice & Theory

- **"Creative fitting"** is the key *co-evolutionary* theme
  Not only do species adapt to the environment, but they adapt the environment to fit their needs
  - But it must be done with regenerative effect,
    - not degenerative, as we do now
- This theme is central to the emerging
  - Net positive living systems approach, or
  - Regenerative urbanism.
- The **region is the right scale and crucial**
  - For creating and maintaining adaptive & regenerative landscapes
  - For successful urban sustainability planning

5. CONCLUSION

Biophilic City-Region Planning & Design

- Is part of profession-wide innovation towards
  - Regenerative urbanism & integrated urban and regional sustainability planning
  - ***To*** **capture the greater value proposition** of sustainability success.
- If so, do we need a more intentional approach, whether or not formalized in a NRA or SDG 18?
- **If you're interested,** continue to follow the International Division's initiative.

Thank You

Questions:

1. **Is** biophilic city planning & integrative regenerative urban-regional sustainability planning
   - a *powerful way of understanding sustainability, the "end game," and how to get there*?
2. **Is it** the next big sustainability step?
3. **Do we need** a NRA, SDG 18: Make Regions…?

Scott T. Edmondson, AICP, scott.edmondson@sfgov.org

Regional Water Planning for Climate Resilience

APA Divisions Council 2018 Product Grant
Regional & Intergovernmental Planning Division

APA
Regional &
Intergovernmental

Project Goals

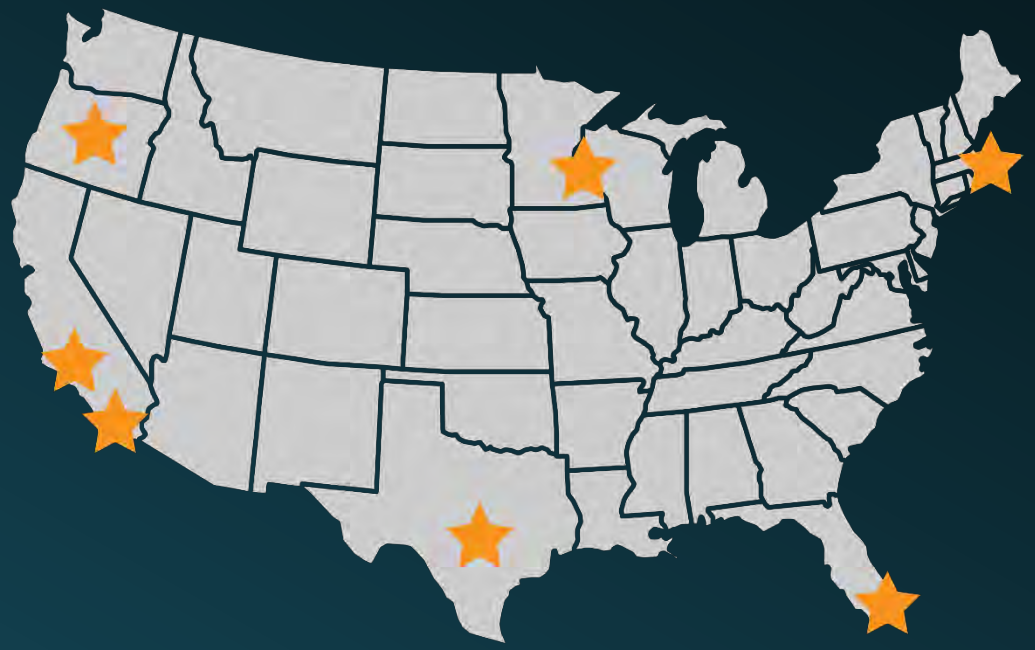
- Identify best practices in integrated water resource management and climate change
- Illustrate coordinated planning at various scales
- Highlight issues in different geographic /ecological regions

Rationale

- 2016 APA Policy Guide on Water
  - Importance of water as essential and organizing element in healthy environments
  - Integrated water planning will increase resilience to climate change
  - New mechanisms for interdisciplinary efforts are critical to effective water management and the protection of the water environment
- 2017 APA poll
  - Climate change most critical issue
  - "Regional" most appropriate geographic scope

Regions Examined

- Miami-Dade County, FL
- Cape Cod, MA
- State of Texas
- Minneapolis – St. Paul, MN
- San Diego & Ventura Counties, CA
- State of Oregon

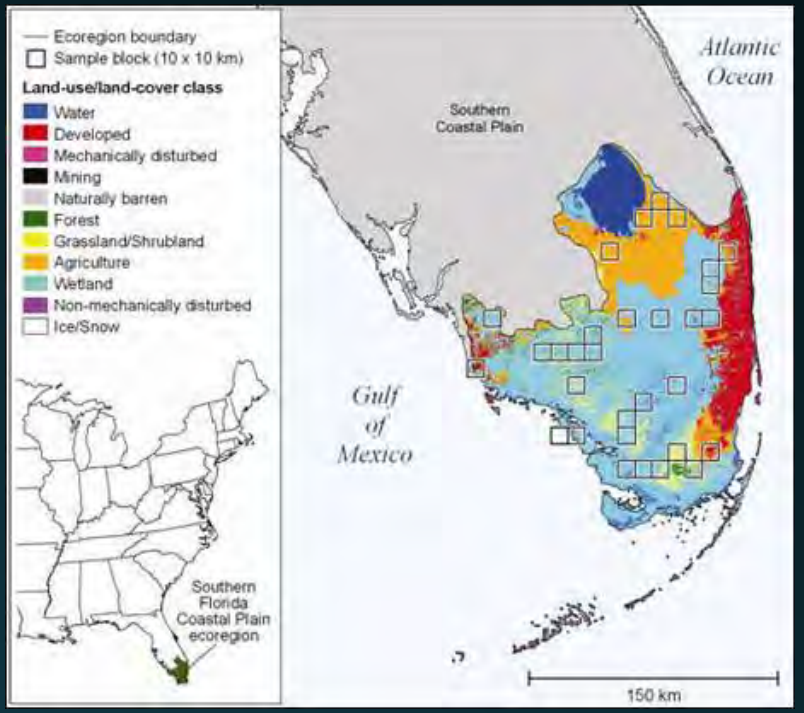


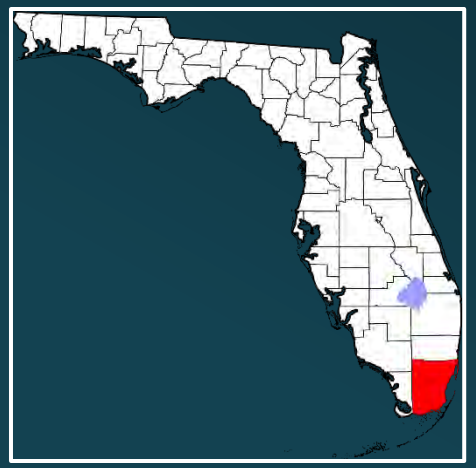
Miami – Dade County, Florida

Contributor: Andrew Carter, Ph.D. Esq.
Research Director, Miami Waterkeeper

Miami-Dade County

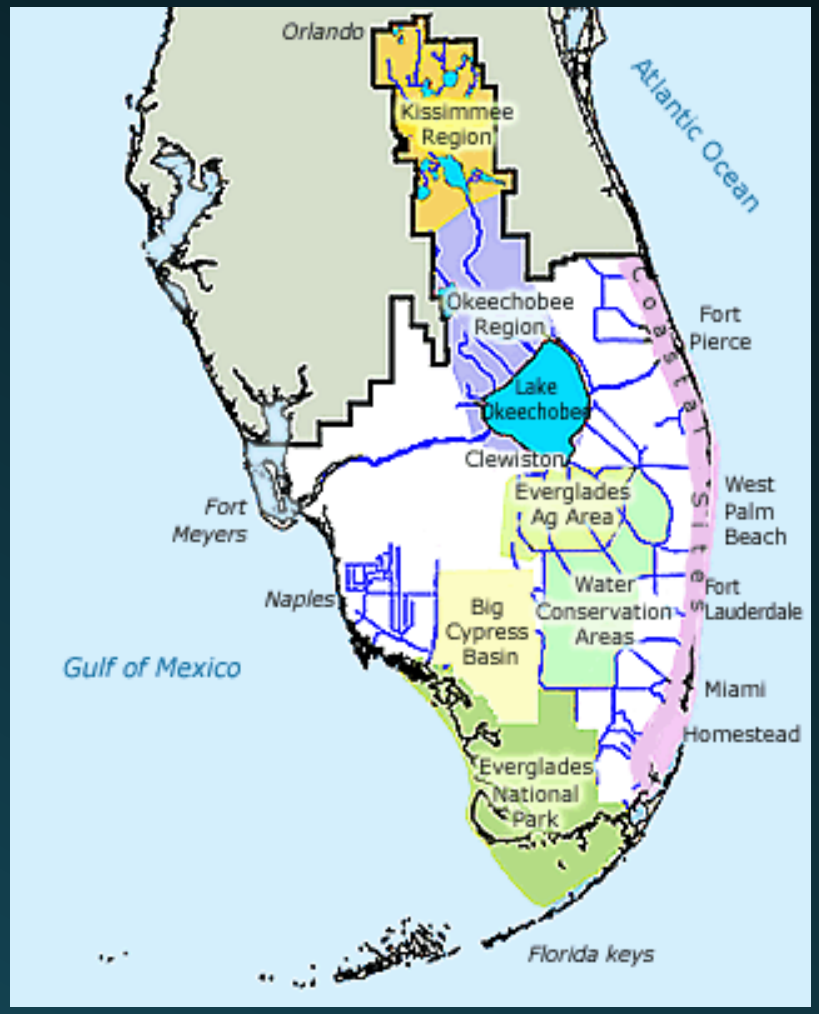
- Population ~2.7 million
- Tropical climate (~60 inches of rain per year)
- Average elevation ~6 feet above sea level
- Porous ground structure
- Rapid urbanization





Water and Climate Challenges

- Increased flooding
- Saltwater intrusion of aquifers
- Increased evaporation from surface water
- Change in rainfall patterns
- Change in hurricane patterns (fewer, but stronger)

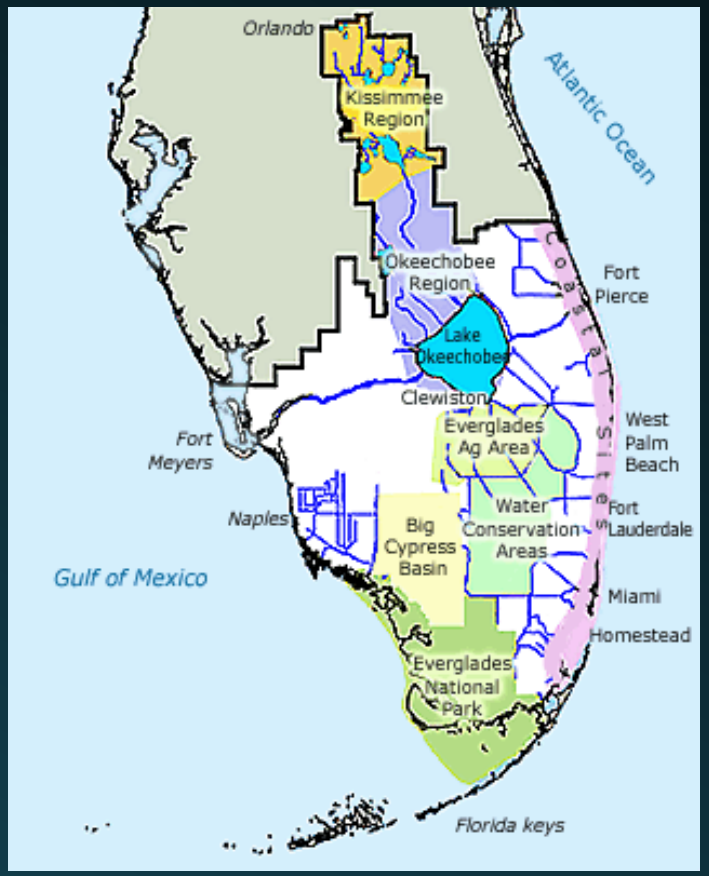


One Water Challenges

- Patchwork of jurisdictions
- Absence of resiliency planning at state level
- Rapid urbanization and development
- Aging water and sewer infrastructure

Governance Structure

- South Florida Water Management District
  - Surface and subsurface water management
  - Massive flood control/water supply canal system
  - Multi-watershed/county jurisdiction (see image)
- Miami-Dade County government
  - Water and Sewer (drinking water and wastewater)
  - Department of Environmental Resource Management (surface water quality)
- Municipalities (City of Miami, Miami Beach, etc.)
- Florida Department of Transportation



Progress Towards One Water Approach

- Evolving governance structures and increased coordination between local governments
  - Southeast Florida Regional Compact on Climate Change
    - Coordinate resiliency planning between counties/municipalities
  - Proliferation of resiliency agencies at municipal level
  - Slow move towards regional integrated water management
  - Coupled land use planning/water management

Green/Blue Infrastructure at Coastal Interface

- Mangrove restoration (flood mitigation/erosion control/water quality)
- Coral reef restoration (dissipation of wave energy/flood control)
- Retention ponds and similar features (flood control)
- Permeable pavement and novel urban design features to increase infiltration (flood control)
- Restoration of traditional Everglades water flow through Comprehensive Everglades Restoration Project (water quality, aquifer recharge, habitat restoration)

Cape Cod, Massachusetts

Contributor:
Sharon Rooney, AICP

The Cape Cod Region

- 586 miles of shoreline
- 10 miles wide at widest point
- 215,000 year-round population, peak population doubles in summer months
- Coastal Plains and Atlantic Coastal Pine Barrens ecoregion
- Highly permeable sandy glacial deposits

Cape Cod's Nitrogen Problem

- 15 towns – Home Rule state
- Almost 1,000 ponds
- 1 sole source aquifer
- 52 embayment watersheds
- 32 shared watersheds
- ~80% nitrogen that enters watersheds from septic systems
- 34 impaired watersheds require nitrogen reduction to meet water quality goals

What is the 208 Plan?

Clean Water Act Section 208

Cape Cod Commission was directed to update the 1978 Plan

The Commonwealth provided $3M to update the Plan

208 Plan Approach

Diverse Technology + Multiple Solutions

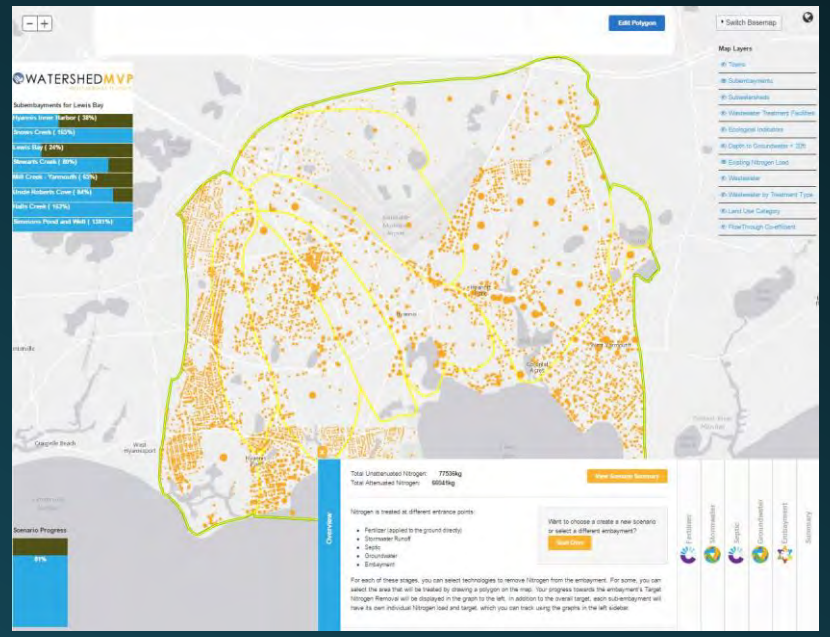
High Stakeholder Engagement

Watershed based

Adaptive Management, Pilot Projects, Progress Monitoring

Alternative Technologies & Tools

- Watershed MVP application assists officials and community members in creating most cost-effective and efficient solutions to Cape Cod's wastewater problem
- Technologies matrix includes menu of options at different scales for nutrient management
- Many options are more resilient



Cape Cod's Climate Challenges

- Anticipate only localized effects on water resources and infrastructure from SLR
- Increased shoreline erosion
- Increased height of storm surge and coastal flooding due to SLR
- Frequency and duration of severe storms
- Extreme summer heat events
- $9B worth of property in special flood hazard areas

Resilient Cape Cod

NOAA Coastal Resiliency Grant Program

- 3-Year, $780,000 grant awarded to CCC and partners
- Investigate environmental and socio-economic effects of local and regional coastal resiliency strategies
- Town of Barnstable pilot program

GRANT PARTNERS

CAPE COD COMMISSION

APCC Association to Preserve Cape Cod

SEAL OF THE TOWN OF BARNSTABLE, MASS. 1639. ADOPTED MAY 4, 1889

WAQUOIT BAY NATIONAL ESTUARINE RESEARCH RESERVE

SUPPORTING AGENCIES

Woods Hole Sea Grant

PROVINCETOWN CENTER FOR COASTAL STUDIES

Massachusetts Office of Coastal Zone Management

Adaptation Strategies Matrix

OPTIONS FOR BUILDING RESILIENCE

Collect and organize information on the spectrum of possible resilience strategies

DO NOTHING?

BEACH NOURISHMENT?

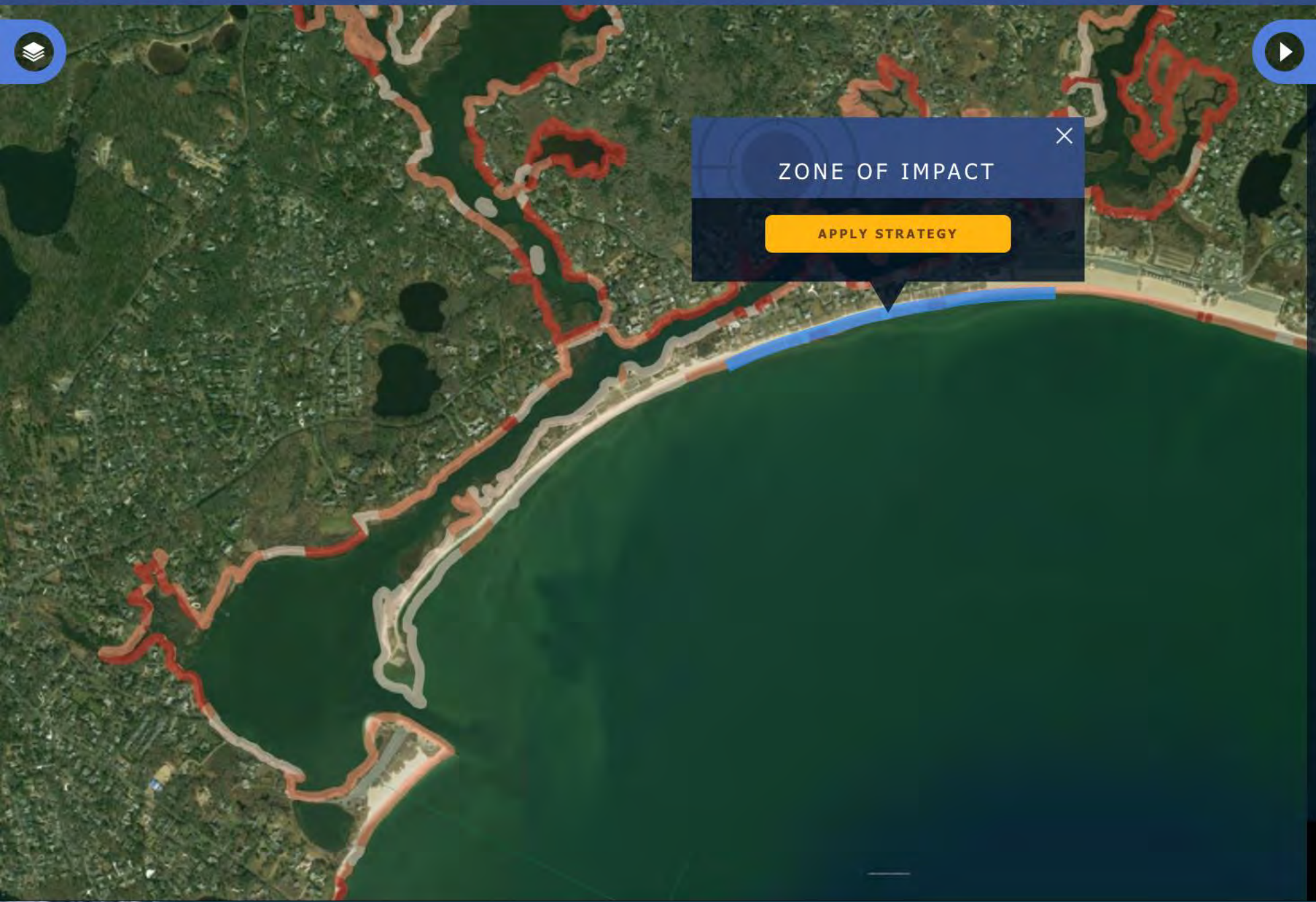
OFFSHORE REEFS?

COASTAL ARMORING?

Application Name

Erosion Planner

Barnstable



STRATEGIES

STRATEGY REACH

SCALE	COST	LIFESPAN
Neighborhood	Low	Medium

PUBLIC INFRASTRUCTURE EFFECT

2

Critical Facilities Impacted

ON | OFF

Disconnected Roads

ON | OFF

Coastal Access

HABITAT EFFECT

- SALT MARSH: 5 Acres $1000 Value* ▲
- EELGRASS : 8 Acres $1000 Value* ▼
- SHELLFISH BEDS: 199 Acres $100,000 Value* ▲
- RARE SPECIES : 4 Acres $10,000 Value* ▼

*Based on 7% Discount, 25-Year Planning Horizon

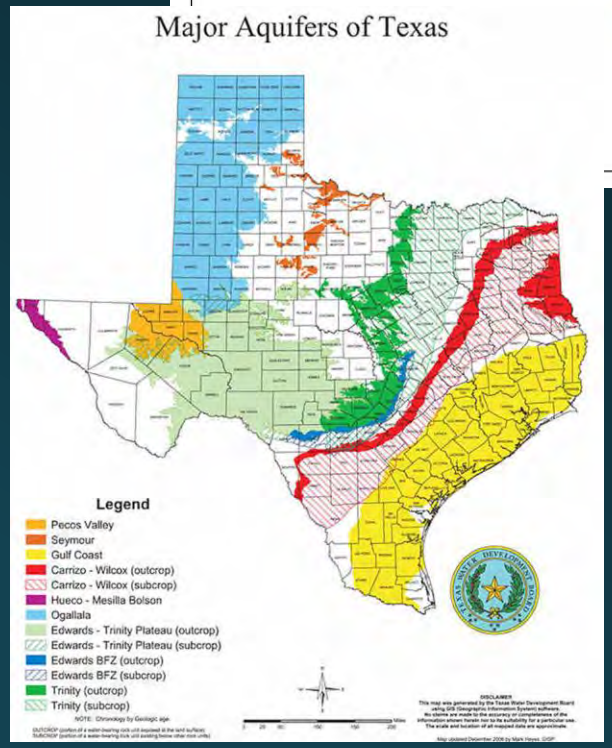
REMOVE STRATEGY

State of Texas

Contributor: Mark VanderSchaaf, RIPD

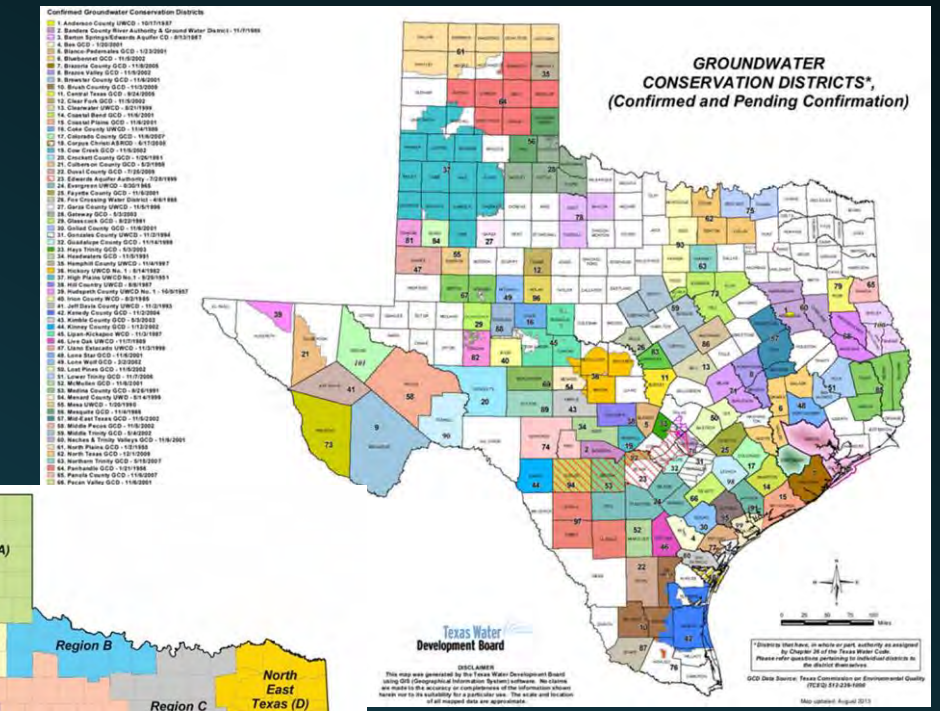
Texas Case Study

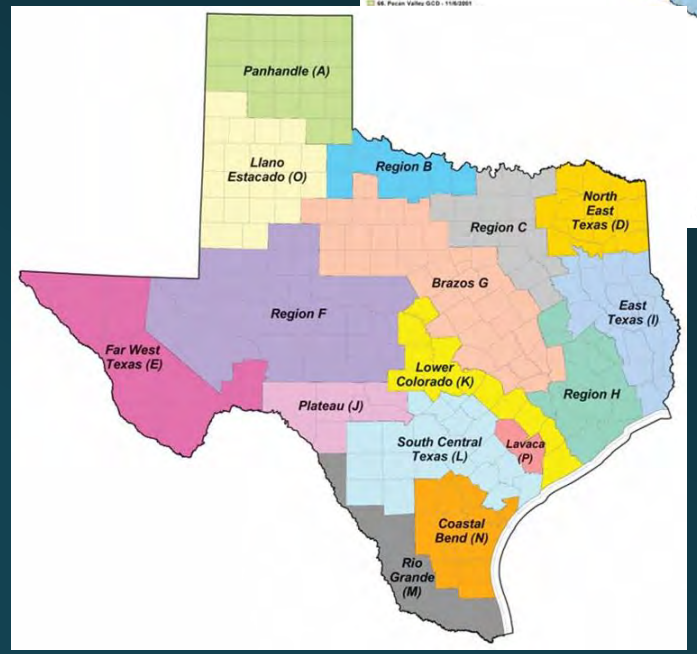
- Second largest state after Alaska
- Anticipated 70% population growth between 2020-2070
- 23 river basins
- 13 major aquifers
- 1200+ municipalities
- Major industries including agriculture, oil, gas, energy
- Variety of ecotypes from desert, plains, bayous to rain forests



Complex Water Management Structure

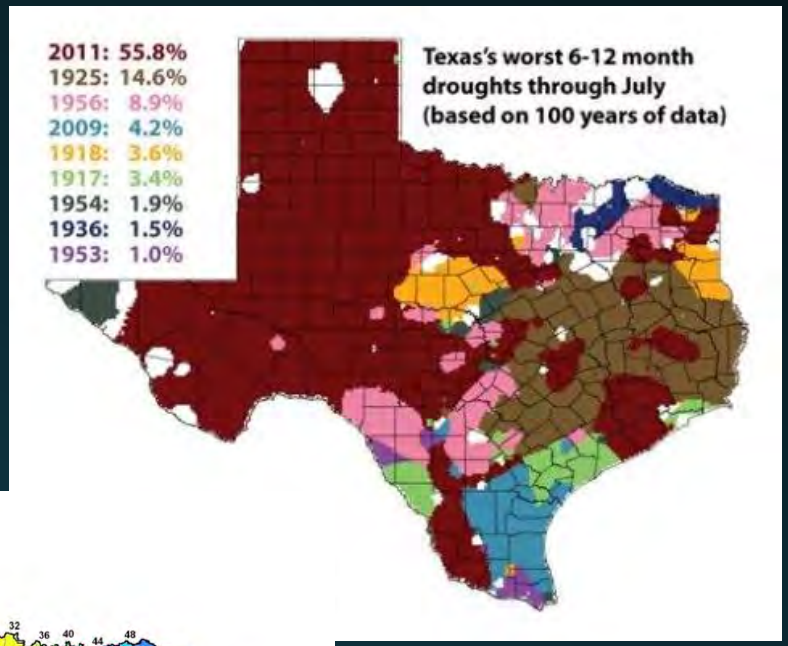
- Texas Water Development Board oversees infrastructure funding for 16 water management regions
- Texas Commission on Environmental Quality oversees same waters through 15 types of districts

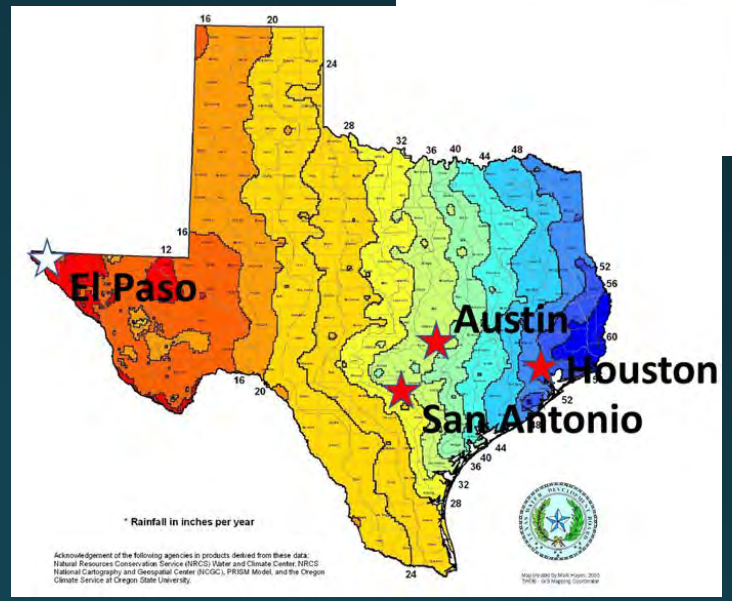




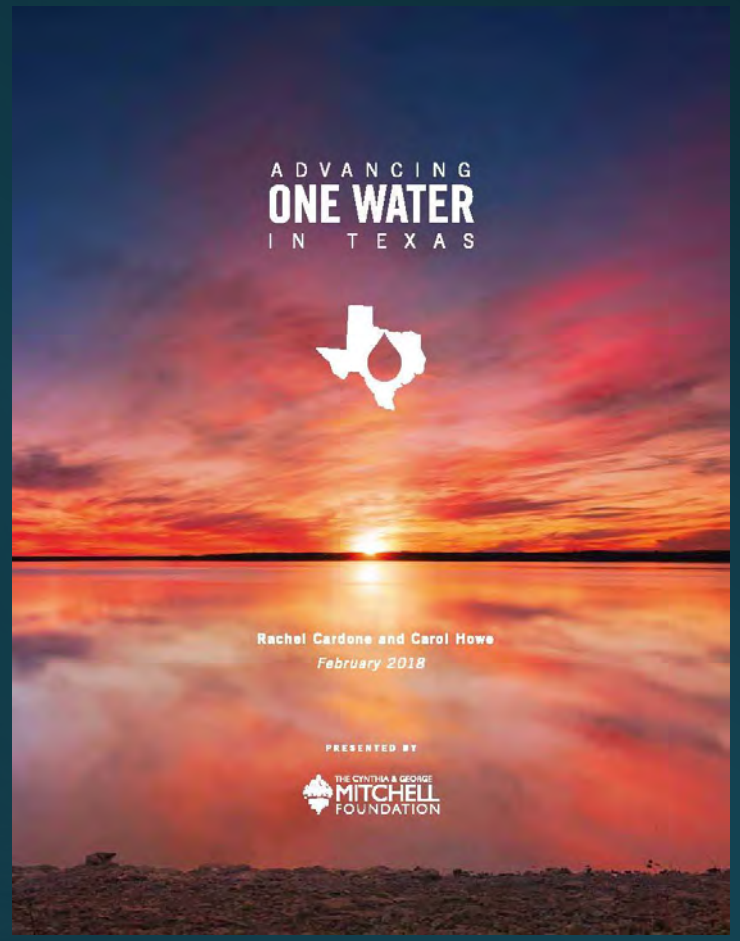
Texas Water & Climate Challenges

- Water shortages
- Increased frequency of weather extremes
- Increased temps and record droughts
- Extraordinary flood events





Advancing One Water in Texas



- February 2018 report supported by Mitchell Foundation envisions a One Water future to address population growth and climate change
- Collaboration across water silos essential ingredient
- 2017 State Water Plan includes $8.1B more than 2012 Plan, with 20% for conservation activities

One Water Examples in Texas

- San Antonio Water System(SAWS) largest direct recycled water delivery system in U.S.
- City of Austin 100-year integrated water resource plan
- Rebuild Houston's drainage/infrastructure program
- Biogas production from wastewater in Fort Worth

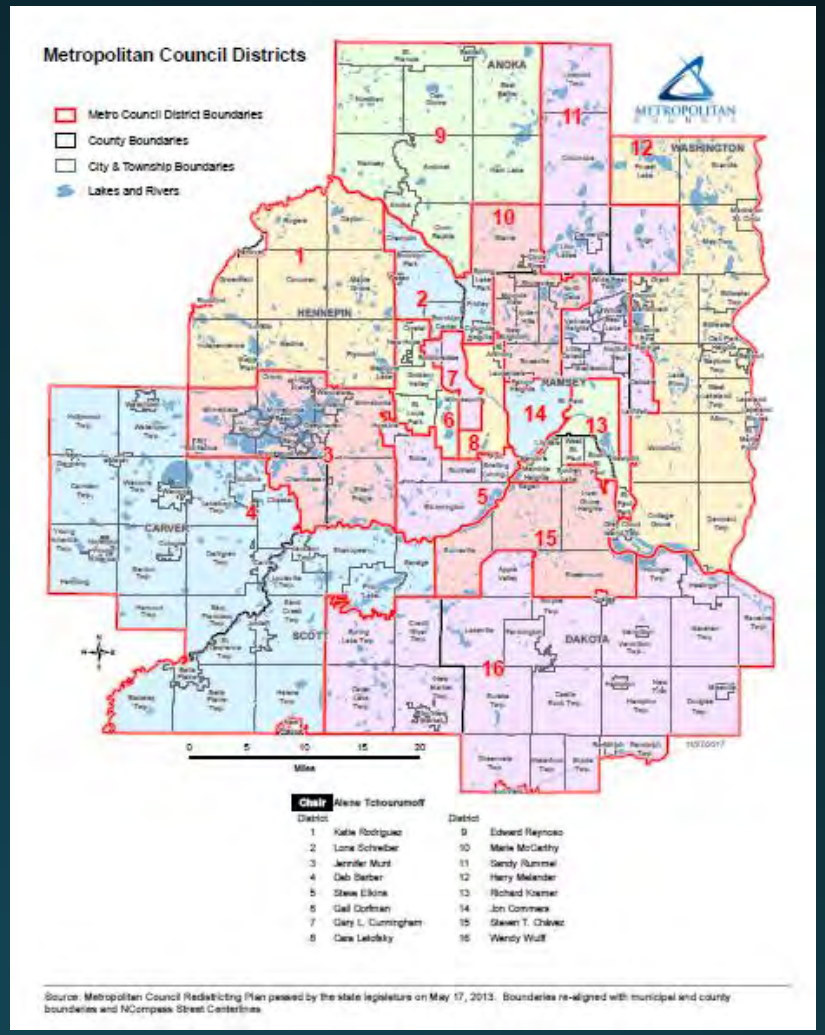
Minneapolis – St. Paul

Contributors:
Mark VanderSchaaf, RIPD

Additional support from faculty and students at the
University of Minnesota, Humphrey School of Public Affairs

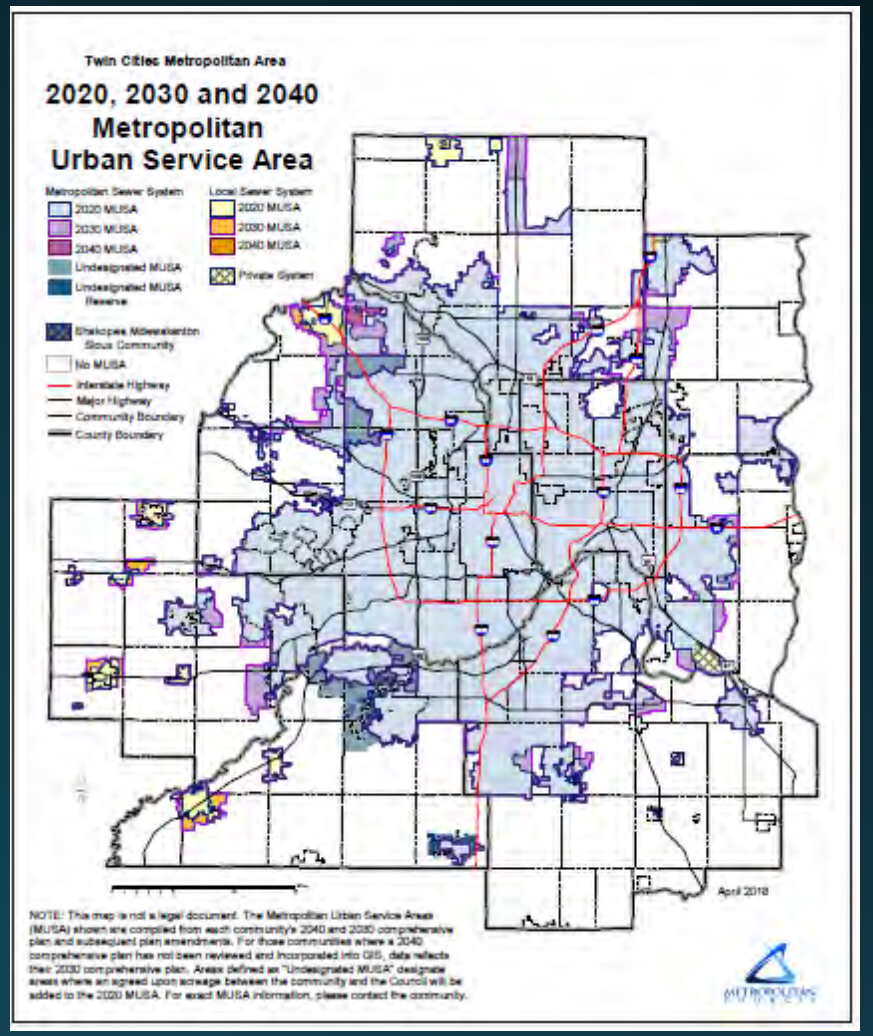
Minneapolis – St. Paul Case Study

- MSA of 16 counties and 3.5 million population, with 7 counties and 3.1 million in Metropolitan Council jurisdiction
- Most of area in Eastern Temperate Forests eco-region, with some Great Plains in southwestern corner



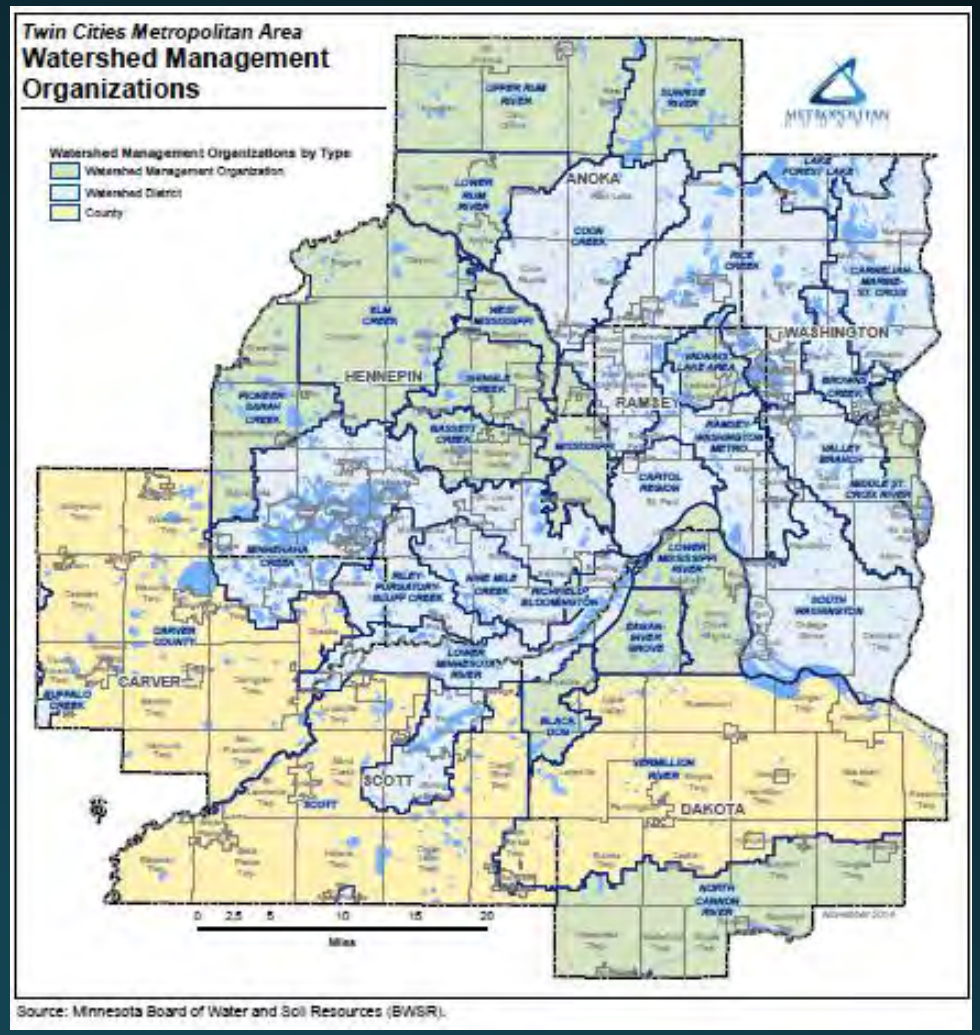
Minneapolis – St. Paul Case Study

- Metropolitan Council plans, owns and operates a regional wastewater system that serves the urbanized portion of the region
- Also has statutory responsibility for transportation (including transit operations), regional parks and trails, review of local plans



Minneapolis – St. Paul Case Study

- Metropolitan Council also has statutory responsibility for overall water planning in the region, with a special focus on drinking water availability
- A network of 33 watershed management organizations guides local comprehensive plans for surface water management



Key Issues

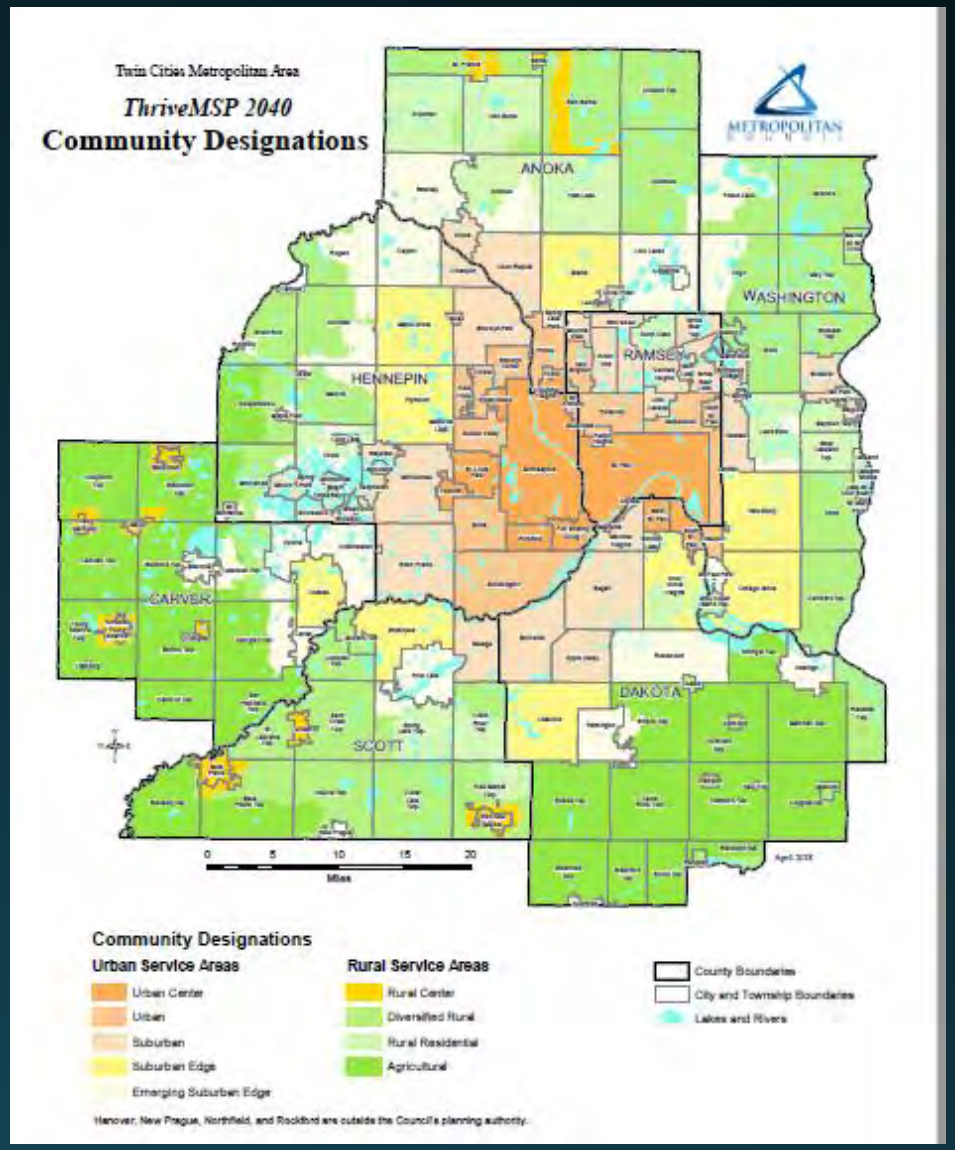
- Climate change impacts do not seriously threaten the amount of the region's ample water resources
- Instead, water issues will be affected by more frequent and serious flood/drought cycles, as well as warmer weather, more algal blooms, and different algae
- Contamination is the region's biggest groundwater issue
- Groundwater depletion is also an issue, with surface water reductions occurring in a few parts of the region

Policy Frameworks

- Metropolitan Council created by State Legislature in 1967
- Metropolitan Surface Water Management Act of 1982 requires local units of government to prepare and implement comprehensive surface water management plans
- These plans are developed through membership in a watershed management organization.
- They are integrated with other elements in city comprehensive plans that must be updated in all 183 of the region's municipalities every ten years and reviewed by Metropolitan Council

Promising Practices

- Metropolitan Council's new "one water" strategy, uniting wastewater, surface water, stormwater and groundwater aspects with specific regional and local responsibilities within eight different community designations
- Watershed management organizations
- Extra funding via "Legacy Amendment"

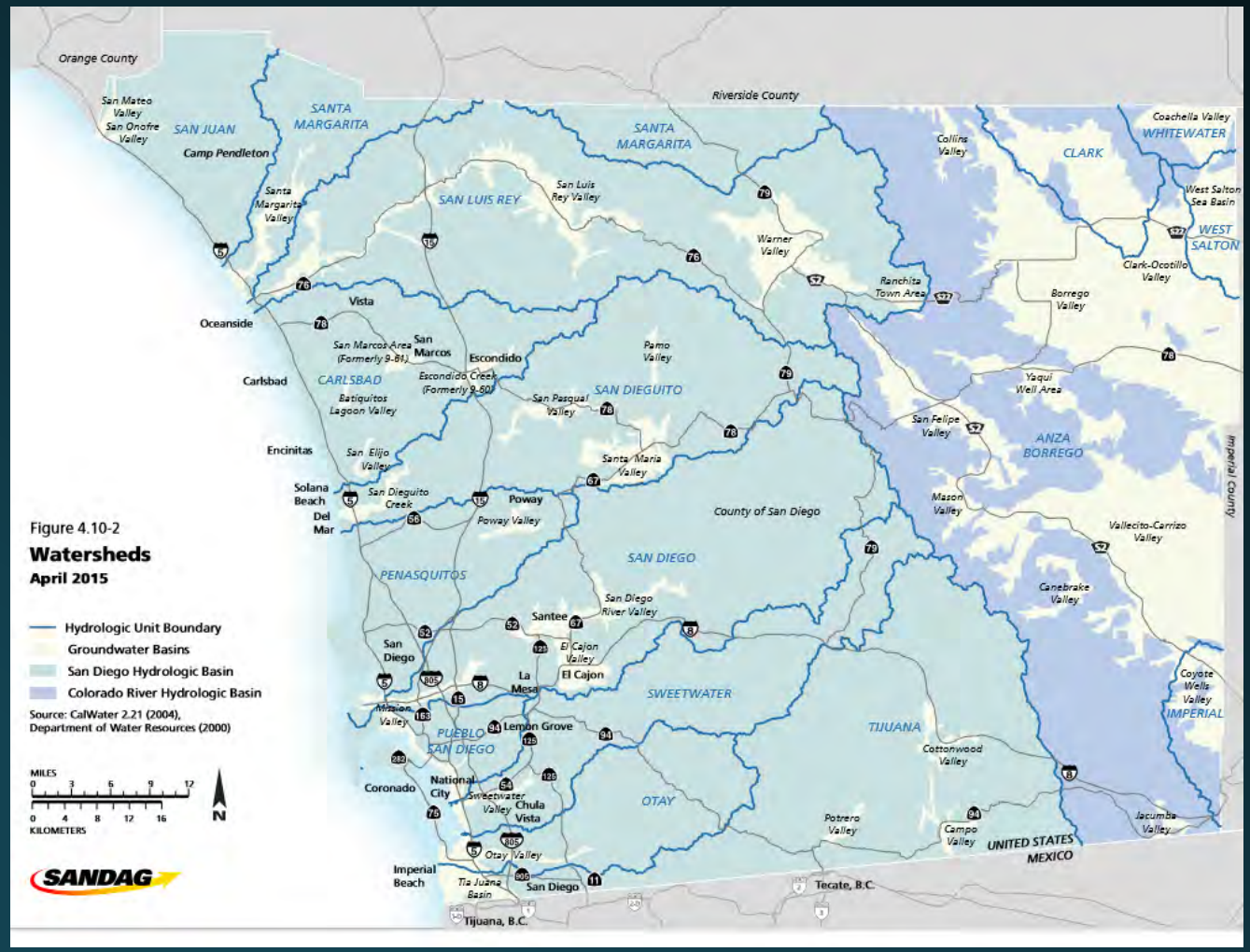


San Diego County, CA

Contributors:
Robert Leiter, FAICP

California Case Study

- San Diego County located in *Mediterranean California* Ecoregion
- Western San Diego County is located in San Diego Hydrologic Basin, which includes 11 watersheds



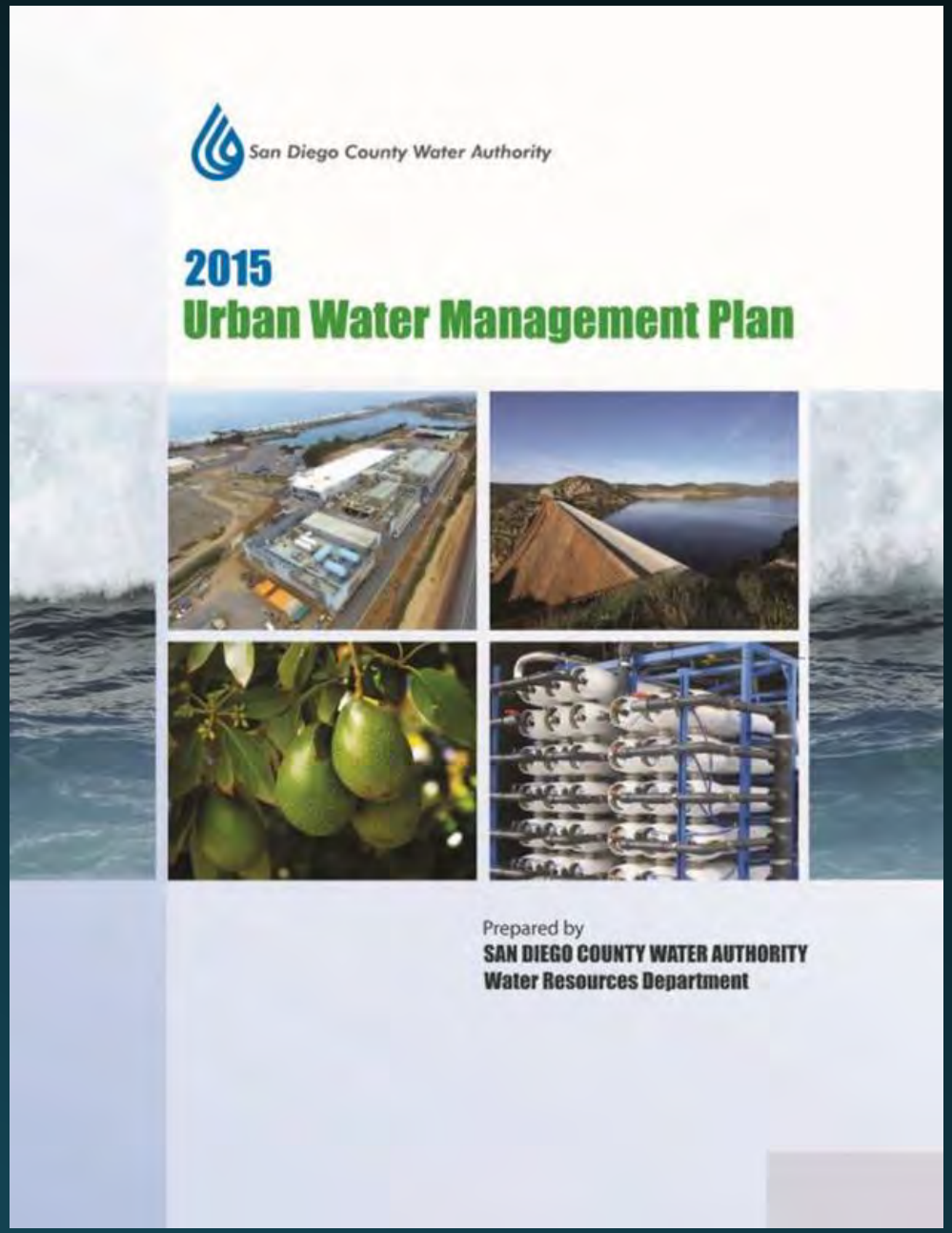
California Case Study

Water Resource Issues:

- Limited surface water and groundwater within basin; continued urban growth
- Region is susceptible to droughts

Climate Impacts:

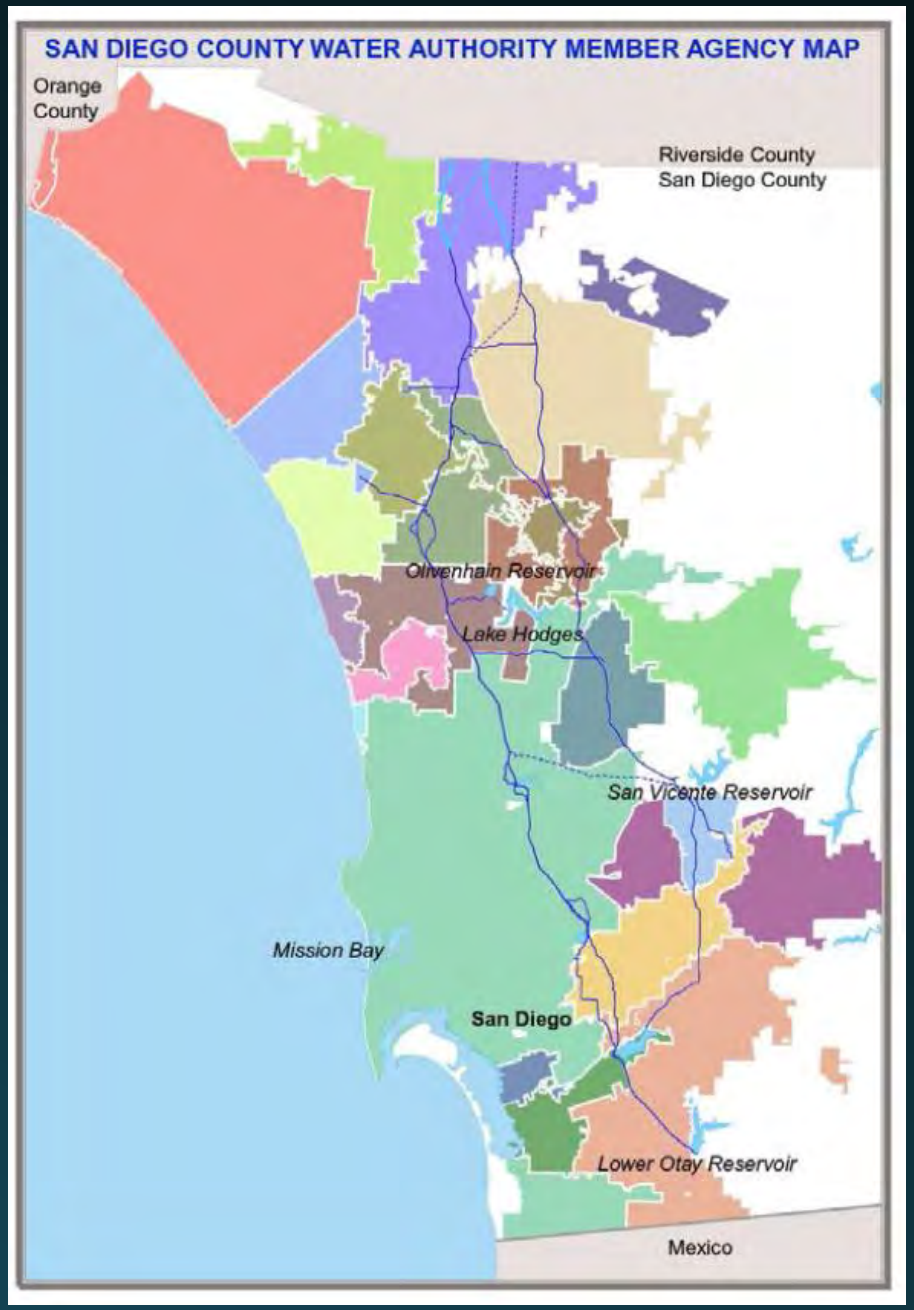
- Changes in timing and amount of precipitation and increased temperatures
- Changes in risks from wildfires, floods and mudslides



California Case Study

Water resource management in SD region:

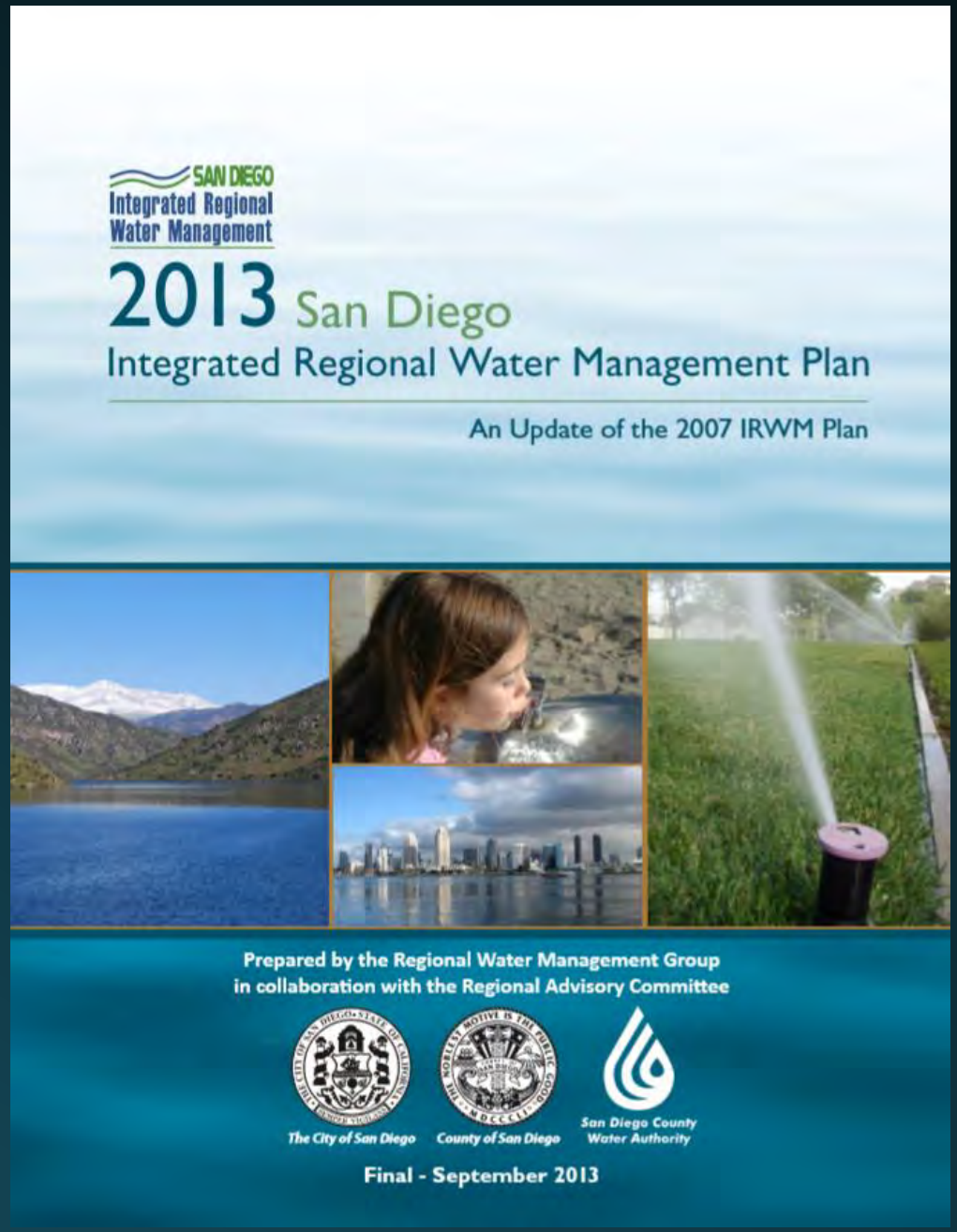
- San Diego County Water Authority
- San Diego Regional Water Quality Control Board
- Local governments and special districts
- Environmental and industry stakeholders



California Case Study

San Diego Integrated Regional Water Management Plan:

- Integrated approach to water supply, water quality and habitat protection
- Promotes "green infrastructure" solutions:
  - Watershed conservation
  - "Green Streets" and "Green Neighborhood" projects
  - Focus on disadvantaged communities
- 2019 Update will address latest findings on climate impacts



State of Oregon

Contributors:
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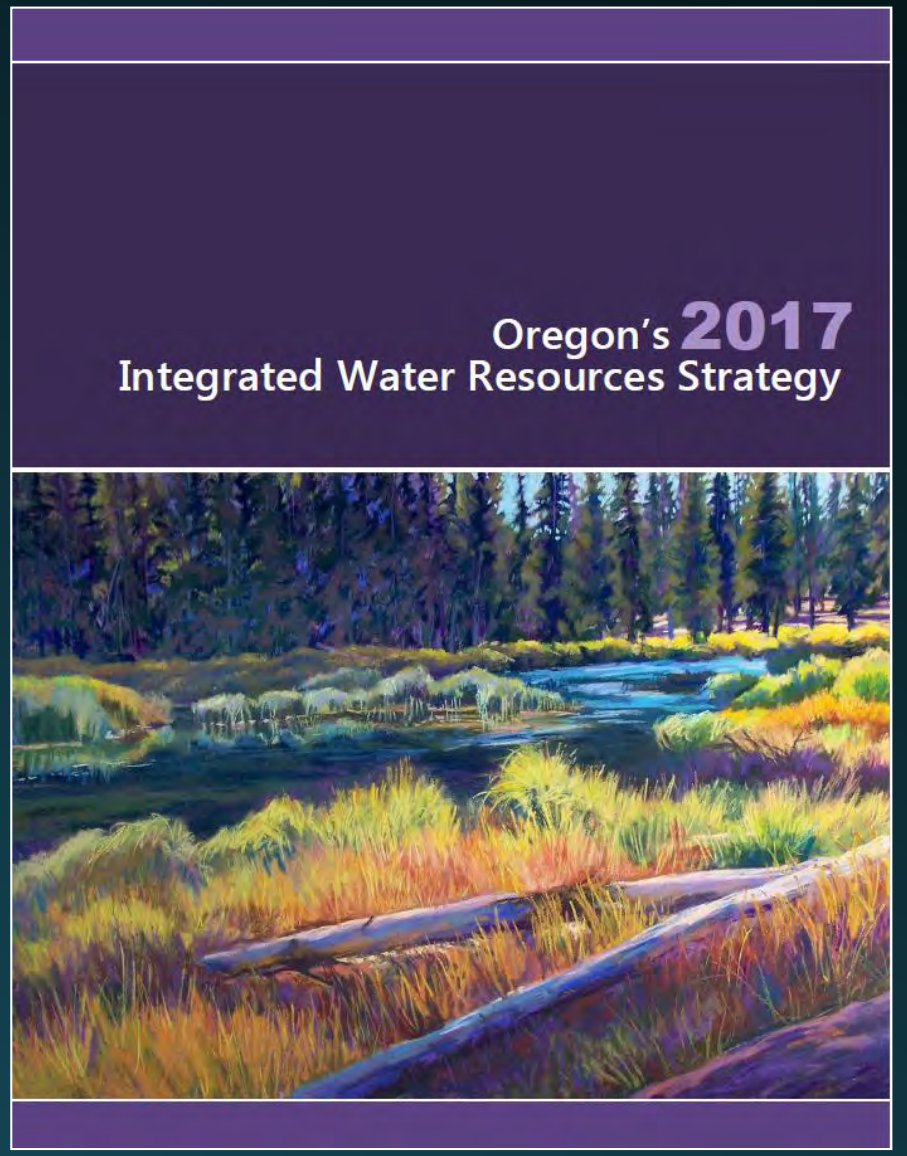
Oregon Case Study

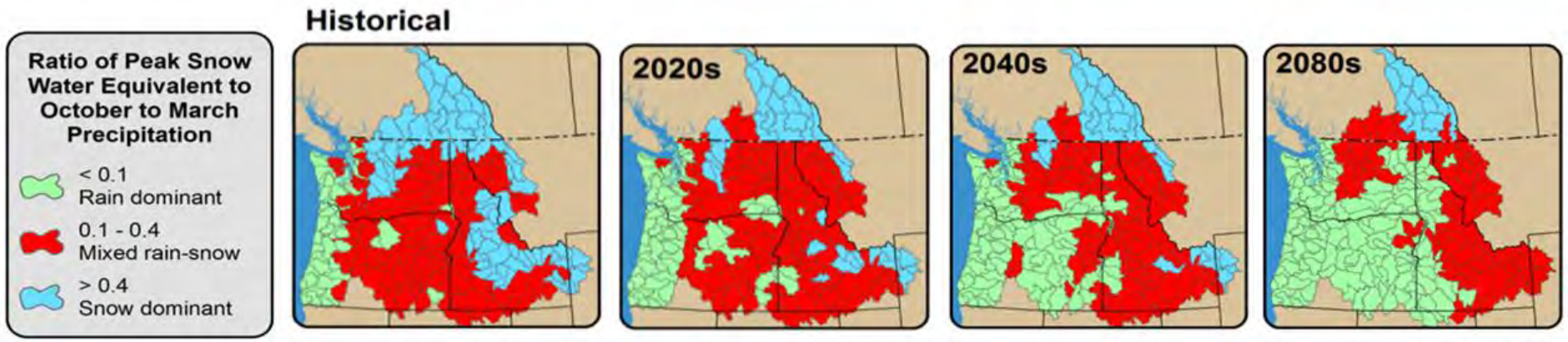
- Oregon's first water strategy adopted in 2012
- Statewide approach
- Integrates water quantity, water quality, and ecological needs
- Accounts for coming pressures
- Framework for locally-initiated, place-based water planning



Oregon Case Study

- Climate change leading to more frequent droughts
- Loss of snowpack, transitioning to rain dominant systems
- Surface water is already fully allocated
- Groundwater and water quality limited areas
- Climate change will exacerbate already existing stressors

Changes in Snowpack from 2020 -2080 (A1B Emissions Scenario)



Source: Hamlet, et al., 2013

Groundwater Aquifers have reached their Limits

Figure 1-6: Groundwater Administrative Areas
(Quality & Quantity)

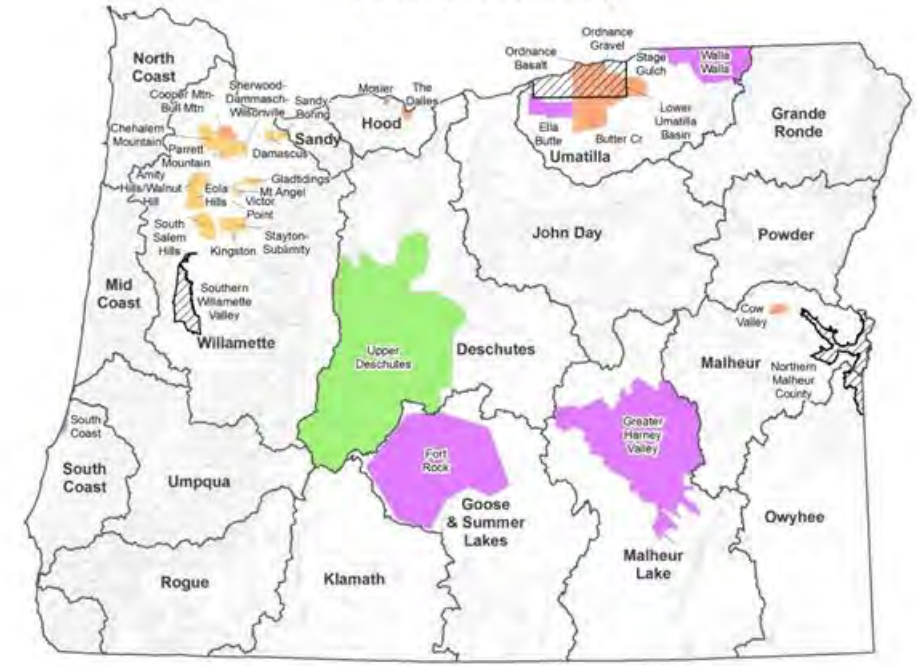
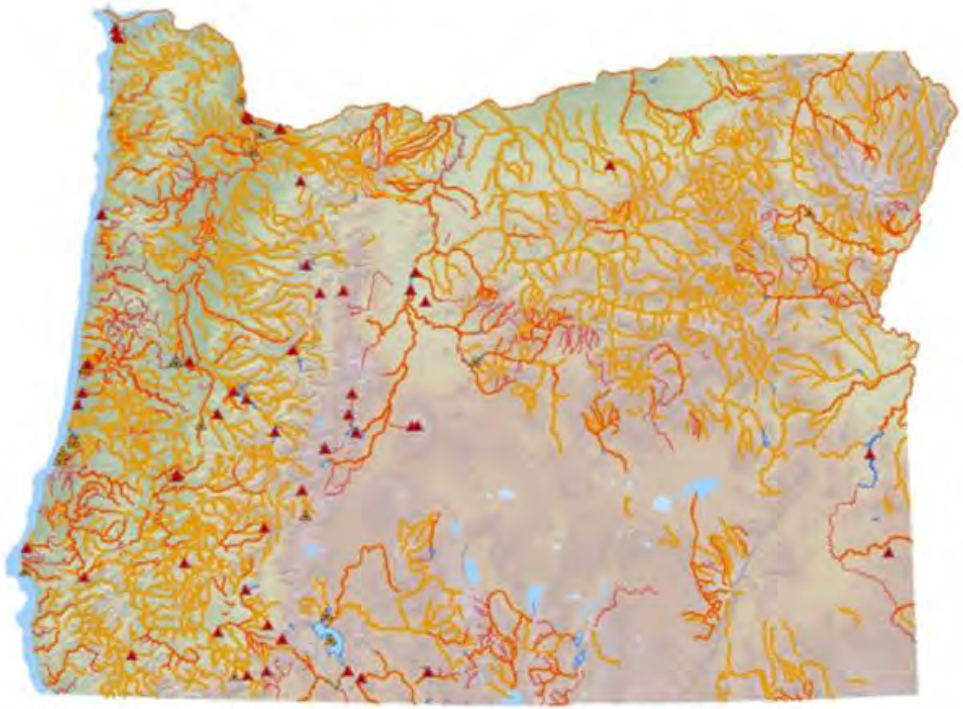


Figure 1-7: Surface Water Quality
Water Quality Limited Waters – 2010 Integrated Report



Impaired – 303(d) list, TMDL needed
(for one or more pollutants)
Streams Lakes

Impaired – 303(d) list, TMDL approved
(for one or more pollutants, or impaired by non-pollutants)
Streams Lakes

Oregon Case Study

- Oregon Water Code established in 1909
- Prior appropriation system – first in time, first in right
- Groundwater and surface water supplies managed by the state
- Basin-level water planning conducted by the state from 1950-1990's
- Basin-level planning ceased in the 1990s
- First statewide water strategy adopted in 2012
- "Place-based planning" initiated in 2015 in four locations

Oregon Case Study

- Four places currently undertaking place-based water planning
- Locally-initiated, with state partners at the table
- Testing a set of planning guidelines
- Taking an integrated look at water issues
- Climate Impacts Research Consortium providing assistance

The policy handbook is available to APA members at:

https://www.planning.org/divisions/regional/member/resources/

Or contact: Sharon Rooney, AICP

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APA

Regional &
Intergovernmental

THANKS!

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