

KICK-STARTING THE RESILIENT CITY

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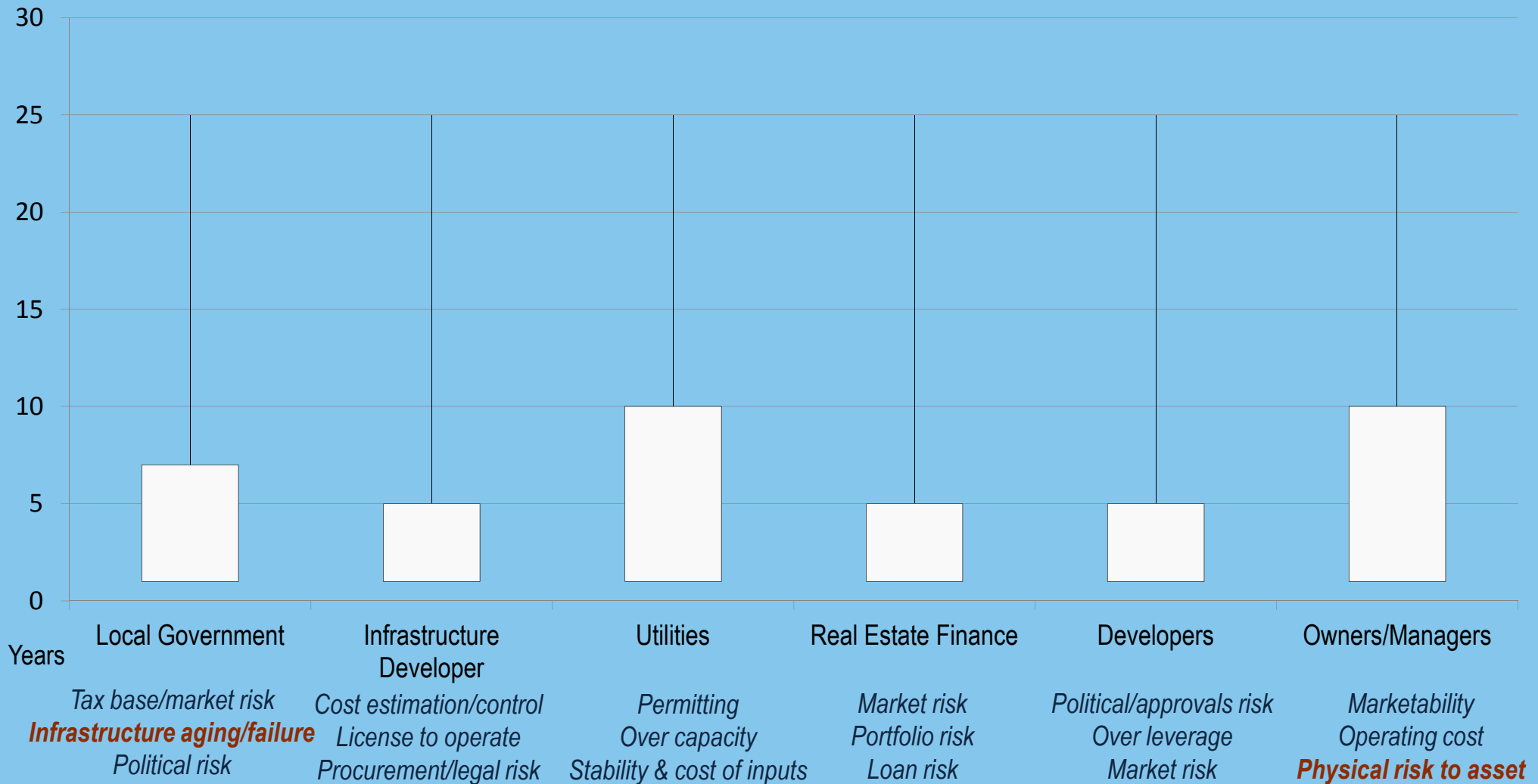
**Managing Partner, The Next Practice
President, ICLEI-USA**





*Cooperative Research & Development between Pacific Gas & Electric Company and
the U.S. Geological Survey on Earthquake Hazards in the San Francisco Bay Area*

PRIORITY CITY-BUILDING RISKS & TIMEFRAMES



Source: Ceres/ClimateWise/The Next Practice (2013)

RISK  **PERFORMANCE**

RESILIENCE 

Resilience is the ability of an urban area or system to provide predictable benefits to residents and users, and predictable returns to investors, under a widening range of circumstances.

PRACTICES

MARKET 'ECOSYSTEMS'

ENHANCED PERFORMANCE

PREDICTABLE MARKET OUTCOMES

Regulation/
Standards/
Liability

Finance/
Taxation

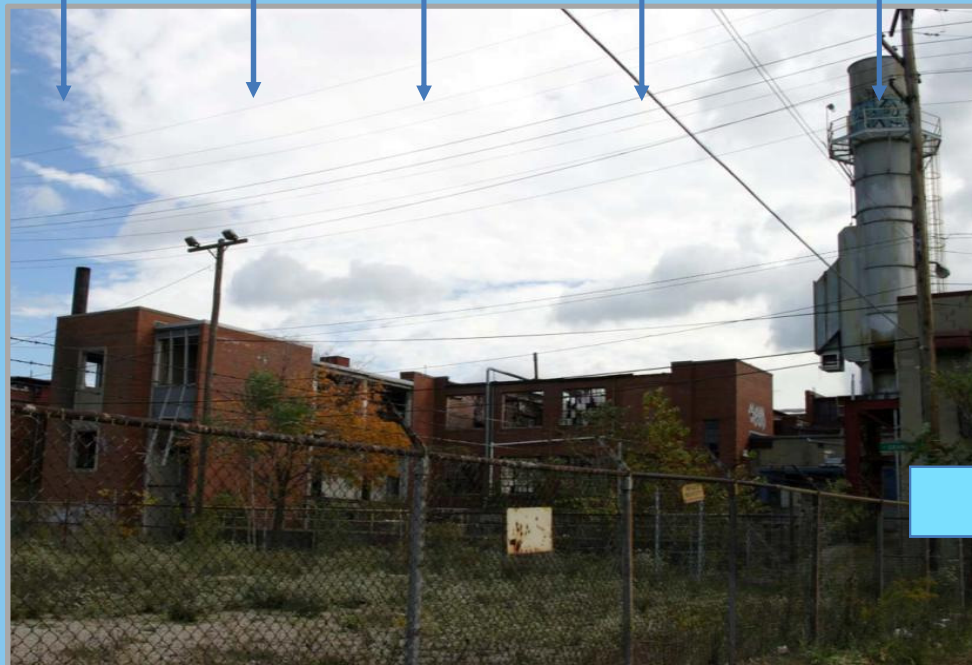
Planning

New
Technology,
Products &
Business Models

Institutions &
Business
Partnerships

- Increased land supply
- Fully re-developed central city precincts
- Growing tax base

Clean-up = housing
prices \uparrow 5.1-12.8 %
over 5km radius*



PRACTICES

MARKET 'ECOSYSTEMS'

ENHANCED PERFORMANCE

PREDICTABLE OUTCOMES

- Building codes
- Carbon protocols
- Revolving loans
- Feed-in tariffs
- Design standards
- New Technology, Products & Business Models
- Business Partnerships

- Affordable Green Residences
- Infrastructure Optimization
- GHG Reductions

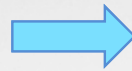
+10.9% \$ values
+9.9% ROI (new)
+19.2% ROI (retrofit)*



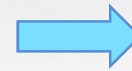
PRACTICES



**MARKET
'ECOSYSTEMS'**



**ENHANCED
PERFORMANCE**



**PREDICTABLE
OUTCOMES**



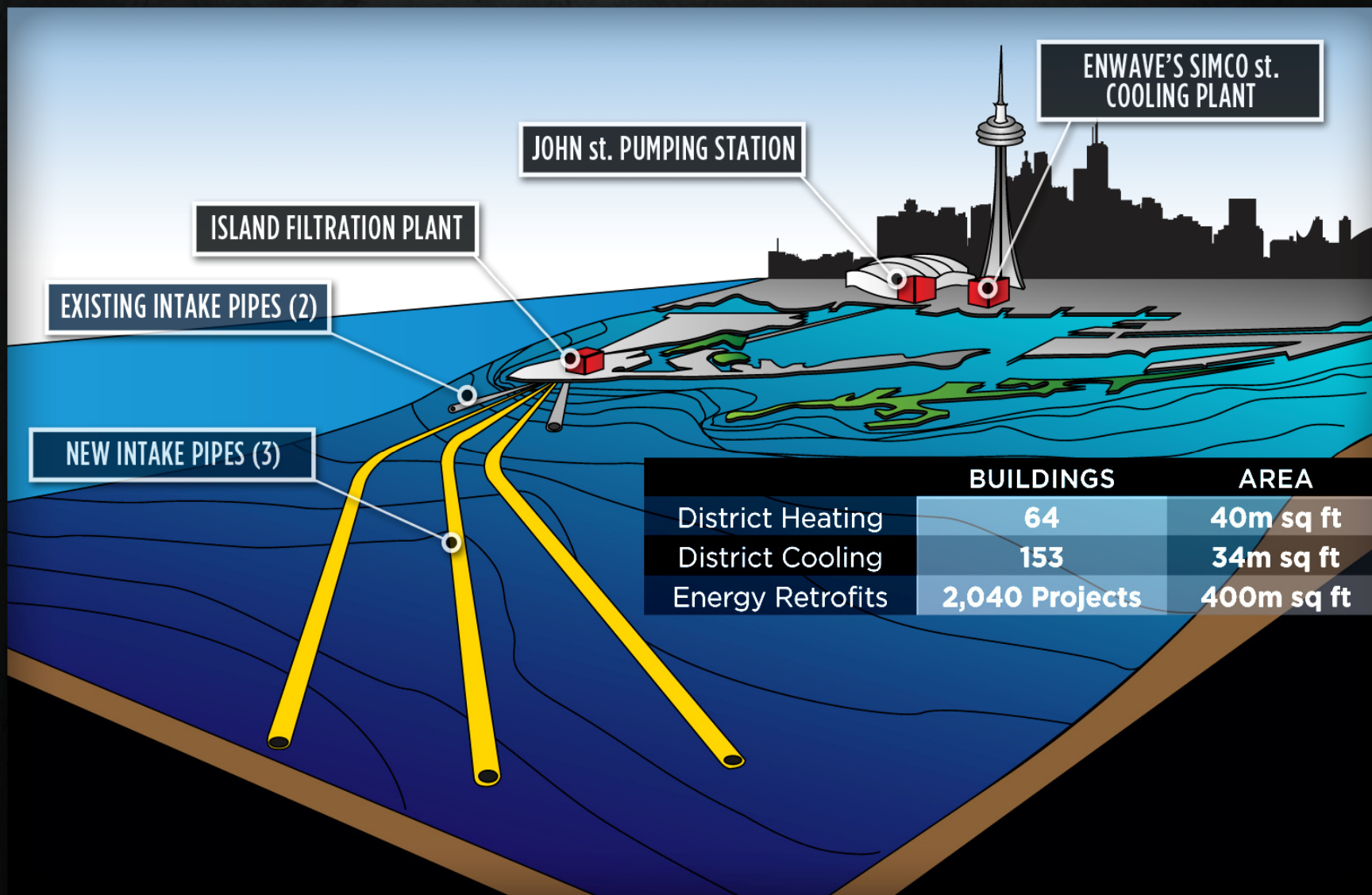
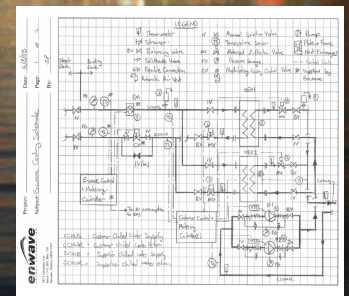


FIGURE: ENWAVE / ADRIAN MORRIS

POLICY INSTITUTION PRODUCT BUSINESS MODEL COMMUNICATION









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THE RESILIENCE ZONE CONCEPT

**draws upon other North American traditions
of local area management**

Through collaboration, new market dynamics have been established to address other urban risk areas: brownfields redevelopment, downtown revitalization, and community safety.

- *Business Improvement Areas*
- *Downtown Partnerships*
- *Empowerment Zones*
- *District Utilities*
- *TIF Districts*
- *Enterprise Zones*
- *Community Improvement Districts*
- *RESILIENCE ZONES*

1. LOCAL AREA RISK MANAGEMENT

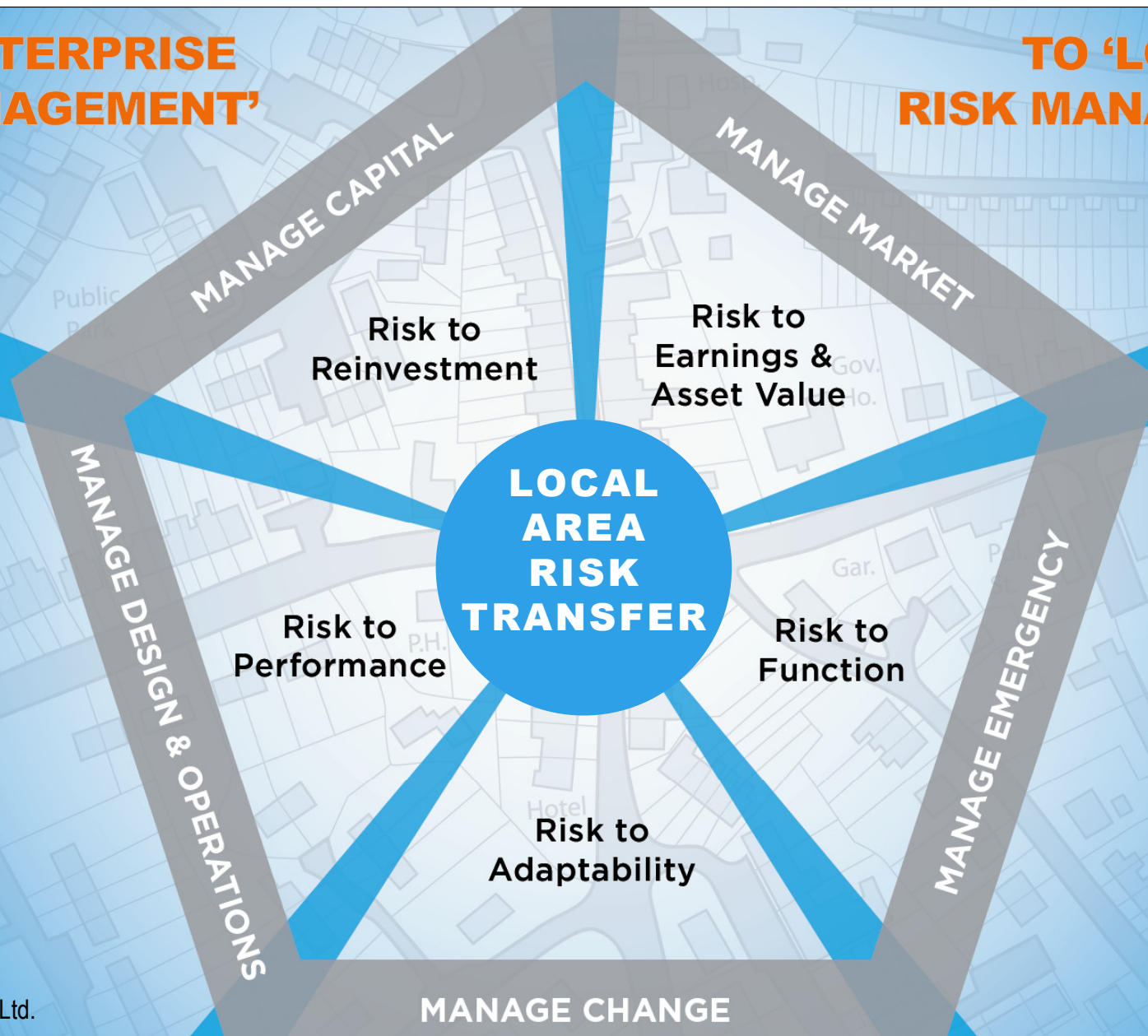
Design the mechanisms and measures for local area risk management

The logic of Enterprise Risk Management can be applied to local areas. Local Area Risk Management is a collaborative effort to devise customized solutions to risks that are distinct to the Resilience Zone. This involves establishing redundancies and mechanisms for responsiveness, safe failure and rapid recovery to current and emerging risks.

- *An area risk management strategy & institution*
- *Risk data collection & analysis*
- *Insurance innovation*
- *Associated planning amendments, investments, and redevelopment*
- *Risk management coordination and support*

**FROM 'ENTERPRISE
RISK MANAGEMENT'**

**TO 'LOCAL AREA
RISK MANAGEMENT'?**



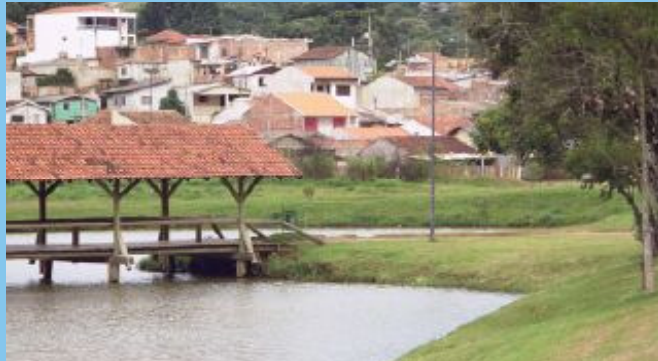
2. RESILIENCE UPGRADING ('2+2=5' SOLUTIONS)

Invest in premium performance

While reducing risks, cost effective measures can also be identified to enhance the overall performance of the area for living and business:

- *Long-term operating cost predictability*
- *Enhanced health, safety & emergency services*
- *More responsive planning, improved landscape and urban design*
- *Improved facilities, increased amenities*





3. COMMUNICATION STRATEGY

Facilitate market recognition

Enhanced resilience—reduced exposure, increased performance—must be carefully and thoroughly communicated to deliver benefits to users and to secure market recognition. Performance benchmarking and place branding are key communications elements.



THE FOUR CORNERSTONES OF A 'RESILIENCE ZONE' STRATEGY

1. ASSET-FOCUSED RISK MANAGEMENT

Develop mechanisms to support household & enterprise level action.

2. LOCAL AREA RISK MANAGEMENT

Develop mechanisms for risk management & transfer at the scale of the local area.

3. RESILIENCE UPGRADING

Design risk reduction measures to enhance today's performance and benefits.

4. COMMUNICATING RESILIENCE BENEFITS

Ensure understanding of benefits and effective use of the new 'Resilience Zone'.

STRATEGY QUESTIONS FOR STAKEHOLDERS

How could we motivate and support asset owners to more fully manage their climate and disaster risk exposures?

Factoring the above, to which risks will the local area remain exposed over the near / medium term?

How could we manage, pool, spread & transfer the remaining risks on a district or other local area basis?

How could such new approaches be developed into market opportunities for insurers and other city-building enterprises?

Could risk management investments be designed so as to improve the area's benefits today?

How could the area's increased amenities & resilience be measured? How could they be compared with competing locations?

How would users be supported to fully secure new benefits? How would the area's unique benefits be communicated to the market?

How do you help establish resilience as a new standard in city-building and location choice?

CORNERSTONE #2: LOCAL AREA RISK MANAGEMENT

(Examples of measures for: extreme heat, flooding, wildfire, sea level rise)

Policy, Regulatory, Legal & Fiscal Innovation	<ul style="list-style-type: none"> Establish detailed GIS-based risk documentation for the area. Form partnership to increase data exchange on climate risk exposure between insurers and public entities. Develop local area emergency management plans that include: provision for emergency water supplies, food delivery programs, cooling rooms, public water taps Implement incentives for local business continuity planning Organize collaborative cross-sector efforts to collect data, e.g. collective funding for flood plain mapping. Neighborhood scale flooding vulnerability assessments could be undertaken to build community-level awareness and buy-in for individual property and local area mitigation expenditures Plan & design areas of 'herd immunity' with wildfire buffers, flood and storm surge protection barriers etc. on their peripheries Apply the use of maintenance assessment districts to allow homeowner groups to establish collective assessments for common risk mitigation investments. Finance open space and coastal buffer protection with watershed and open space protection fees.
Product, Technological & Business Innovation	<ul style="list-style-type: none"> Establish decentralized police, fire, and emergency medical service units , catering to unique vulnerabilities or designated zones Engage a local community development corporation or business improvement area association to develop an insurable entity in collaboration with a large insurance broker to establish a single neighborhood risk pool. Utilities research the potential benefits of collaborating with property owners on a power circuit basis. Invest in circuit area back up power supply. Explore using the Joint Powers Authority legal structure (California) to establish a group captive insurance mechanism for a district. Include system reliability in evaluations undertaken for infrastructure capital planning. Establish clear protocols for triaging customers during water and power shortages. Provide incentives to elevate electrical and HVAC systems in flood prone basements, or to upgrade basements generally
Institutional Innovation	<ul style="list-style-type: none"> Establish a local coordinating body to champion existing risk management measures and incentives to the area, e.g., installation of sewer backwater valves, brush clearing norms. Establish a special purpose vehicle for designated 'resilience zones' to serve as the area's risk reduction and transfer agency.
Communications Innovation	<ul style="list-style-type: none"> Organize local area 'communications hubs' in instances of brownouts, extreme storm and heat events, power outages, etc. Establish special protocols to communicate preparedness and emergency routines for an area's more vulnerable populations. Provide public access to aggregated local area risk data, to provide a sounder basis for making investment and design decisions. Communicate the risk posed by perimeter properties to other properties. Communicating success of risk reduction activities already adopted (e.g., white and green roofs on local area micro-climates).

CORNERSTONE #3: RESILIENCE UPGRADING

(Examples of measures for: extreme heat, flooding, wildfire, sea level rise)

Policy, Regulatory, Legal & Fiscal Innovation	<ul style="list-style-type: none"> Create a Special Assessment District or Tax District, or institute a Local Improvement Charge, associated with the establishment of the Resilience Zone with specific focus on financing redevelopment projects that reduce priority risks and increases local area resiliency Evaluate the issuance of municipal resilience bonds for upgrading of designated Resilience Zones Develop a city- or region-wide resiliency standard and measurement protocol Undertake economic and planning studies to evaluate the impacts of resilience on local business sectors, vulnerable populations, social equity etc.
Product, Technological & Business Innovation	<ul style="list-style-type: none"> Focus on building more resilient infrastructure Establish local community power storage/generation, e.g., micro power generation and alternative power sources localized to a community rather than individual structure Establish micro power grids in particular at business park and campus scales, tailored to the demand patterns of tenants Scale demonstrated "best practices" to establish cooled micro-climates, such as white and green roofs, and green area restoration Develop amenities enhancements that also serve as refuges during extreme weather events: shade structures in parks, recreation facilities, capture wind Design open space and coastal buffer protection areas so that they serve as parks and include recreational and other community facilities Develop or re-design community facilities that serve as everyday hubs for local retail, health clinics, recreation, shared workspaces, and/or continuing education classes but also provide emergency shelters and back-up water, power and communications during emergencies Develop food delivery services in partnership with grocery chains and food service companies to provide emergency food delivery for vulnerable populations in instances of public transit failure Re-landscape parks, gardens, and roadways for resilience in extreme heat and drought as well as for storm water retention and percolation Upgrade building facades and create/implement new maintenance procedures for structures, reflecting changing climatic conditions and extremes Establish a service to install smart meters that automatically triage certain power usage (e.g., bedroom lighting) during brownout periods but maintain priority uses (e.g., refrigeration). Establish a power pricing gradient that rewards reduced consumption at peak periods or for low priority uses.
Institutional Innovation	<ul style="list-style-type: none"> Establish a special purpose vehicle for one or more Resilience Zones to manage the redevelopment process in each, integrating local area risk reduction measures into the overall upgrading of the area for current residents, businesses, and users
Communications Innovation	<ul style="list-style-type: none"> Develop a community rating and accreditation system to enable the comparative rating of the resilience of local areas and buildings



Building Resilient Cities

FROM RISK ASSESSMENT TO REDEVELOPMENT

<http://www.ceres.org/resources/reports/building-resilient-cities-from-risk-assessment-to-redevelopment>



BUILDING RESILIENT CITIES

THE RESILIENCE OPPORTUNITY

A Resilience Zone initiative establishes the market support for a new form of urban performance: resilience. Through collaboration, a mix of customized solutions can be designed to manage risks that still confront the local area after options have been exhausted at the individual property and enterprise scales. Solutions at the scale of the zone can also be purposefully designed to increase the area's function, amenities, and economic performance.



Source: Ceres/ClimateWise/The Next Practice (2013)