



# Foundational Learning Session: Climate Science Making the connections, taking action

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- It's all connected
- It's about the approach
  - Climate Planning
  - Procurement
  - International Examples
- It's about taking Action



**Detroit, Michigan – The West Side**



## Millions in federal flood aid approved for Detroit area

By KATE WELLS • DEC 16, 2014



MICHIGAN STATE POLICE

Detroit-area residents are getting a reported \$246 million in federal recovery money after the August floods.

FEMA has approved \$141 million in grants, while businesses will get another \$104 million in low-interest loans.

But others are still waiting.

## Long term forecast for Metro Detroit: More freeway flooding

By SARAH CWIEK • AUG 17, 2016



MDOT / VIA TWITTER

Major stretches of highway throughout Metro Detroit were **flooded out Tuesday morning**, after heavy rainfall Monday night.

That's likely a "new normal" people will just have to deal with going forward.

## 3 months after flooding, Detroit still cleaning up

By LESTER GRAHAM • NOV 17, 2014



LESTER GRAHAM / MICHIGAN RADIO

It's been more than three months since parts of the Detroit area were flooded by torrential rains. People are still cleaning up the mess. Organizations from around the nation are helping, but it's a huge job.

In Berkley, AmeriCorps volunteers are in Duane Van Geison's basement, cutting up waterlogged wood frames and cleaning up a mess. It smells like rotting wood and mildew.

Upstairs, Van Geison is huddled by a space heater, trying to keep warm. He's 74 years old and disabled. He's no longer able to walk downstairs.



## Air Quality

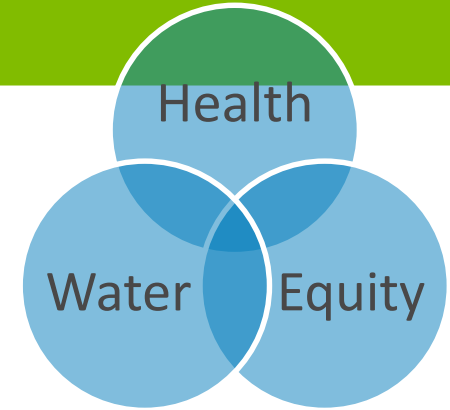
- Climate change poses many threats to human health: worsened air quality and extreme weather events.
- More than 17.7 million people with incomes meeting the federal poverty definition live in counties that received an F for at least one pollutant (State of The Air, 2017).
- **Evidence shows that people who have low incomes may face higher risk from air pollution.**

## Urban Flooding

- Communities in the United States are being threatened by sewage overflows, flooding, polluted stormwater, leaky pipes, and at-risk water supplies.
- **Most severe impacts often fall on low-wealth communities and communities of color due to historic underinvestment and disinvestment in these communities.**
- Disadvantaged communities are often located in floodplains, in drained wetlands, or adjacent to sewage outfalls.

**Weather might not discriminate, but the impacts of climate change do.**

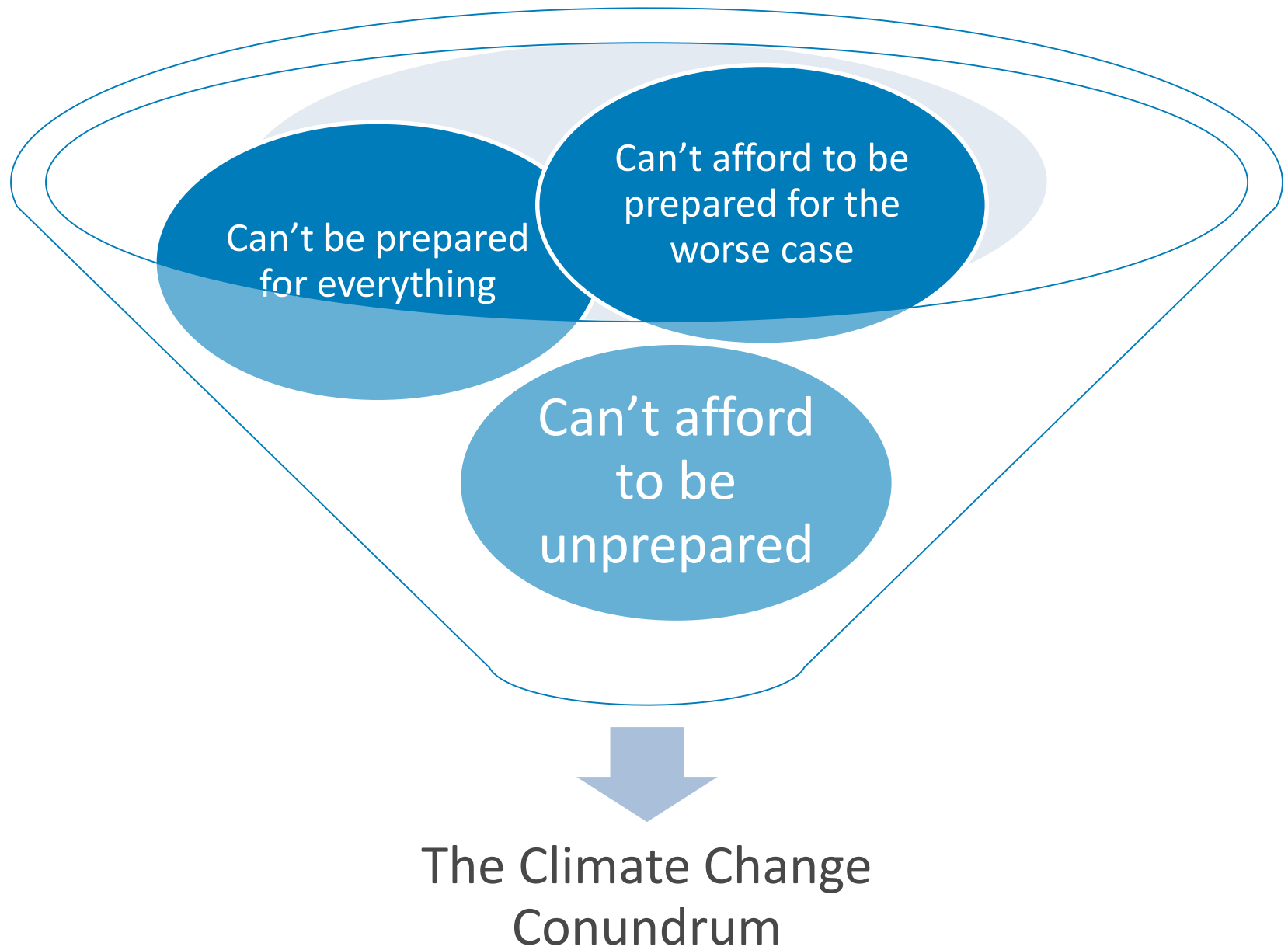
# Climate change is the connector:



- Most low-income communities, communities of color, and/or climate vulnerable communities are not just dealing with one climate impact at a time
- Our work must account for multiple stressors and increased vulnerability
- Racial Inequity in our structures and institutions has made it worse for low-income communities, communities of color, as it relates to flooding. Why?
  - *Residing in high-flood prone areas (redlining)*
  - *Have inadequate or no flood insurance*
  - *Have inadequate storm water infrastructure*
  - *Lack significant investments in other critical community infrastructure*
  - *Receive delayed, or inadequate response during and after a disaster*
  - *Lack of education and access to the policy-making and resource distribution processes*
  - *Physical and mental health is at risk*

## Overview of Water-Related Community Impacts

	Health	Economic	Social Cohesion
Core Impacts	<p><b>Contaminated waterways</b> – Low-income communities are more at risk of contamination and water-borne disease, especially during floods, due to proximity to industrial waterfronts, wastewater plants, and Superfund sites.</p> <p><b>Polluted drinking water</b> – Aging infrastructure faced by poorer neighborhoods and shrinking cities acts as a climate risk multiplier, increasing vulnerability.</p> <p><b>Severe harm</b> – Low-income communities face higher risk of death and injury during storms due to lack of robust preparation and response systems.</p> <p><b>Long-term effects</b> – Flood damage (e.g., mold) can cause respiratory disease, while displacement and property loss can lead to mental health issues.</p> <p><b>Chronic risk</b> – Informal housing, homeless encampments, trailer parks and unincorporated towns face the highest risk of chronic water supply insecurity (which can threaten sanitation and drinking water quality) and flood damage.</p>	<p><b>Storm/flood damages</b> – Severe weather disproportionately harms low-income neighborhoods because homes are often physically less sturdy, emergency response is weaker and families have fewer resources (e.g., insurance, savings) to assist with recovery.</p> <p><b>Water rates</b> – Rates are often disproportionately high for lower-income families, and climate shocks drive up rates through a higher cost of treatment, infrastructure operation and maintenance and emergency supplies during drought.</p> <p><b>Employment</b> – Certain industries (e.g., fishing) are harmed by limited or contaminated water supply, impacting incomes, employment, or even food security.</p>	<p><b>Dislocation</b> – Communities can be temporarily or permanently displaced after large climate events, and there can be a lack of political will and financial resources to rebuild.</p> <p><b>Climate planning</b> – Low-income communities are often not included in planning efforts, resulting in planning that does not prioritize their specific needs or risks.</p> <p><b>Removal of children from homes</b> – Low-income communities experience water shutoffs due to unpaid bills and unaffordable water rates. Parents can lose their children to foster care when homes without water are declared unfit for habitation.</p>
Solution Co-Benefits	<p>Proactive urban planning and green infrastructure can reduce heat island impacts from climate change, improve local air and water quality, and provide opportunities for recreation.</p>	<p>Green infrastructure can be a strong local job creator, while the adoption of water efficiency measures can directly reduce household water bills.</p>	<p>Distributed supply and treatment can provide local control and community ownership over these important water system functions.</p>





## But we still have to adapt....

- **Understand:** climate science and projections capabilities and limitations
- **Assess:** what in my systems are vulnerable?
- **Plan:** incorporate climate uncertainty into planning
- **Implement:** adaptation strategies

So what are the approaches people are taking?

**Planning, Procurement, Partnership**

## PLANNING - WATER UTILITY CLIMATE ALLIANCE

<http://www.wucaonline.org/>



*Vision: Climate-resilient water utilities, thriving communities*

*Mission: Collaboratively advance water utility climate change adaptation*

## Decision Making Under Conditions of Deep Uncertainty (DMDU)

- DMDU methods ARE about being prepared for whatever happens in the future
  - Past climate is no longer a prediction of future or current climate conditions
- Basic DMDU principles:
  - Consider multiple futures – choose these futures to stress test your organization's plans
  - Make your plans flexible and adaptive, which often makes them more robust
  - Use your analytics to explore many futures and options, not to tell you what to do
- Competing analysis can contribute to gridlock

# How do you incorporate science into your planning?

- Scenario Planning Process
  - ✓ Identify the focus
  - ✓ Identify the driving forces (i.e. those we cannot control)
    - ✓ Population (moderate growth, rapid growth)
    - ✓ Climate (hot, warm)
    - ✓ Regulations (relaxed, stringent)
    - ✓ External factors that will influence the context
  - ✓ Rank the driving forces
  - ✓ In the near term, make common investments that will set you up for multiple futures

**PROCUREMENT -**



**P R O C U R I N G**  
RESILIENCE WORKSHOP

## What We Mean When We Talk About Procurement



State of Hawaii Procurement Wizard: <http://spo.hawaii.gov/procurement-wizard/manual/introduction/>

### 3 Innovative Procurement Tools



#### REQUEST FOR IDEAS (RFI)

An open call for ideas and/or information based on one or more challenges put forward by a city or utility.



#### COMPETITION & CHALLENGE

An open call for solutions based on a bold problem with a specific incentive or prize for one or more winning entries.



#### PERFORMANCE CONTRACT

A form of agreement where payments are linked to achieving specific pre-stated measurable benchmarks or verified outcomes.

# The Procuring Resilience Workshop

## 7 Cities



**ANCHORAGE**  
AK



**CAMDEN**  
NJ



**EL PASO**  
TX



**GARY**  
IN



**IMPERIAL BEACH**  
CA



**NORFOLK**  
VA



**PROVIDENCE**  
RI

## 8 Implementing Partners



Quantified Ventures



SCAPE



OptiRTC, Inc.



Infrashares



RePipe



Meridiam NA



RISE



120WaterAudit

# Setting Terms for Innovation



🔍 Search vendors, projects, and more...

LOGIN

JOIN

⚙️ ADD SOLUTION

💡 GET INSPIRED

🏢 COMPARE CITIES

📁 FIND COMPANIES

📄 BLOG

## Free Procurement Toolkit For Cities

**Enter Toolkit!**

Average time to complete: **1 hour**

Your work will be saved. You can return to it at any time with the magic button that was emailed to you.

*You may want several colleagues in the same department or across departments go through the toolkit individually, then bring everyone together to compare notes and reconcile responses. This approach can help bring to light data or resources one individual might be aware of, but others might not.*



**PARTNERSHIP**



**WATER  
PAVILION**

**SAN FRANCISCO | SEPTEMBER 13 - 14**

Bringing together leaders on water and climate issues to share successes and explore new solutions



**GLOBAL  
CLIMATE  
ACTION SUMMIT**

**AFFILIATE EVENT**

## Some lessons from The Water Pavilion on building climate resilience

- **Concept of Centrality (Rodrigo Pinto, San Paolo)**
  - Keep the city from growing and bring together housing, transport, etc.
  - Establishing quotas to build green infrastructure in places that they wouldn't
  - “must bring the community with us...we just can't establish rules for resilience alone..”
- **Use of traditional knowledge (Tui Shortland, New Zealand)**
  - Developed cultural health indicators around traditional wisdom to inform decisions in water planning
- **Myths that keep you from mainstreaming climate into planning (Christina Del Rio, United Kingdom)**
  - Not enough data (it's out there...it might just exist in different places)
  - We are vulnerable, but not sure what to do (talk to new people)
  - We know what to do, but the status quo is too hard to change (find “cracks” and incorporate climate into policies already being revised )
  - Cost too much (focus on layering funding, multiple benefits to different partners)
- **Communities Making Opportunity out of climate change, GSI (Dr. Yomi, USA)**
  - Education has to appeal to the values of people
  - Be real, build trust, be human, and listen

# Taking Action through the 4P's...

- **PEOPLE**

- Our previous speakers!
- Working with Indigenous leaders and integrating the Knowledge
- Our international water leaders (both places & people)

- **POLICY**

- Clean Water For All Campaign (Federal)
- Intended Use Plans (State) for Clean Water Fund distribution
- State Revolving Funds, integrating GSI (NRDC paper)
- National Flood Insurance Program

- **PREPARATION**

- Education & Training (climate science, models, etc.)
- 4<sup>th</sup> National Climate Assessment/Sustained Assessment
- Social Vulnerability/Environmental Justice Analysis

- **PARTNERSHIP**

- The Pacific Institute's Water Action Hub
- Center for Climate Adaptation Science and Solutions (Univ. of Arizona)
- Multiple resources on the microsite
- All of you here today!

*Transform urban storm water and waste water systems so they provide reliable, equitable, and innovative services to communities despite the uncertainties introduced by climate change.*

## **Vision: Attributes of Climate Resilient & Equitable Water Systems**

- Integrated, nimble and responsive to climate change
- Manages storm water and wastewater in an equitable way so everyone benefits
- Engages low-income and other marginalized communities in storm water and waste water planning
- Provides multiple benefits to water users - economic, social, and health-related
- Processes storm water and waste water in an energy-efficient manner
- Embeds climate change considerations into the capital planning processes for storm water and waste water
- Encourage practices that get people thinking across the silos



**Thank you**

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**Equitable investment in water infrastructure explicitly engages community voice, policy, planning, investment, hiring, contracting, and operations to ensure that historically underserved communities receive the water infrastructure investment they need, in a manner that improves public health, improves livability, and supports community cohesion.**

***Naturally Stronger, A report from American Rivers for the Clean Water For All Campaign, March 2017 Report***



**Climate Resilient &  
Equitable Water Systems**  
Capital Scan JUNE 2017

THE  
KRESGE  
FOUNDATION

**CREWS**  
CALIFORNIA RESILIENT WATERWAYS

MISSION FIRST  
FOR WATER

CEA  
CALIFORNIA  
ENVIRONMENTAL  
ANALYSIS

**Deploy large-scale green  
infrastructure  
in shrinking cities with  
combined sewer overflow (CSO)  
quality mandates and flood risk**

**Better planning tools and  
data to reduce storm  
damage and increase  
co-benefits**

**Use financial innovation to  
Help scale GI and resiliency  
planning**