

PNW Climate Science Conference  
September 10, 2014

# Building Adaptive Capacity at Seattle Public Utilities

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IMPROVING THE STATE  
OF THE WORLD

Insight Report

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# Global Risks 2013

## Eighth Edition

An Initiative of the Risk Response Network

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Utilities

# Harvard Business Review

APRIL 2014

39 How I Did It  
"Auditions" Are the  
Best Way to Hire  
Mark Mullerberg

111 Operations  
A Manufacturing  
Renaissance in Europe  
Stephen E. Chick et al.

117 Managing Yourself  
15 Rules for Negotiating  
a Job Offer  
Deepak Malhotra

## THE RESILIENT COMPANY

HOW TO THRIVE  
IN A WARMER WORLD

PAGE 55

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Bloomberg  
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C40  
CITIES

# PROTECTING OUR CAPITAL

How climate adaptation  
in cities creates a resilient  
place for business

Based on the CDP responses  
from 207 global cities

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# RISKY BUSINESS

The Economic Risks of Climate Change in the United States

*June 2014*

## A CLIMATE RISK ASSESSMENT FOR THE UNITED STATES

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# water and climate change challenges

- physical
  - alterations of the water cycle; e.g., timing and intensity of precip
- assets and services
  - assets may loss functionality under changing climate
  - provision of essential services interrupted
- institutional
  - acknowledge the management imperative
  - foster collaboration
  - align operating environment

*“According to many experts, water and its availability and quality will be the main pressure on, and issues for, societies and the environment under climate change.”*

*- Intergovernmental Panel on Climate Change Technical Paper VI*





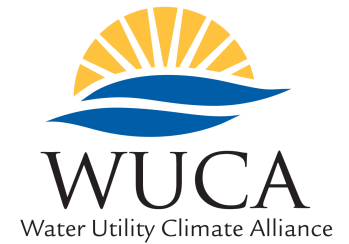




# climate program objectives:

- build sustained capacity to manage the risks of climate change by:
  - enhancing knowledge
  - assessing impacts and vulnerabilities
  - building collaborative partnerships
  - strengthening institutions and people
  - pursuing portfolios of approaches
- leverage sustained capacity to embed what we're learning in what we do
  - strategic planning
  - system planning
  - capital planning
  - system operations

# collaborative partnerships



***Mission:** The Water Utility Climate Alliances provides leadership in assessing and adapting to the potential effects of climate change through collaborative action. We seek to enhance the **usefulness of climate science** for the adaptation community and improve water management **decision-making in the face of climate uncertainty.***

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Slide created by David Behar, SFPUC

# enhancing knowledge/assessing vulnerabilities - research

- PUMA project with CIRC
  - 40 CMIP5 climate scenarios
- member of NW Regional Modeling Consortium
- combined effects of sea level rise + precip
- AR proposal with Jet Propulsion Lab, CA Dept Wtr Resources
- drought forecasting with USGCRP/White House
- WUCA
  - mainstreaming case studies
  - flexible and adaptive regulations
  - PUMA lessons learned white paper

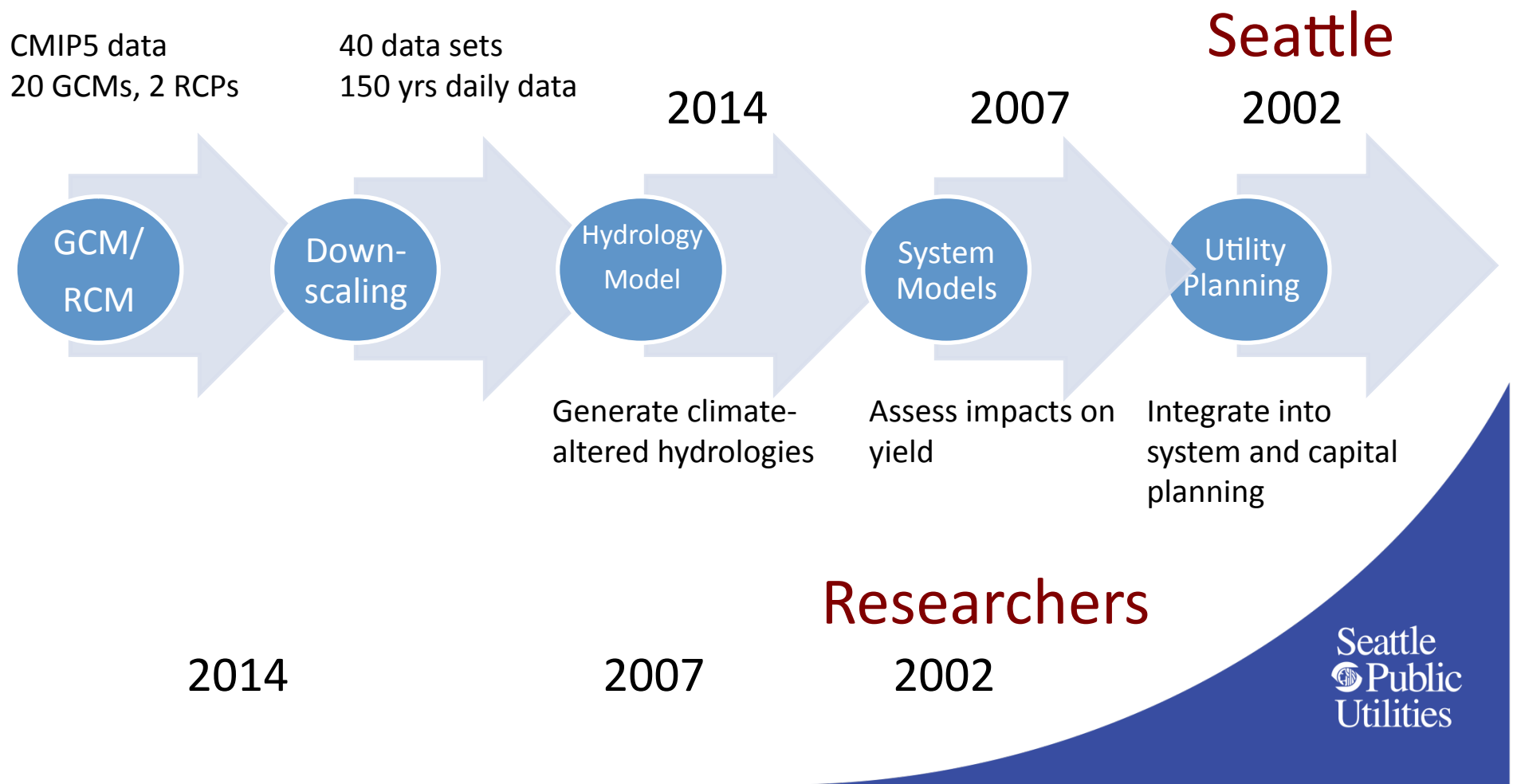
# collaborative partnerships/knowledge enhancement

- Actionable science:

“Actionable science provides data, analyses, projections, or tools that can support decisions regarding management of the risks and impacts of climate change. It is ideally co-produced by scientists and decision-makers and creates rigorous and accessible products to meet the needs of stakeholders.”

- Working Definition, DOI Advisory Committee on Climate and Natural Resource Science

# strengthening institutions





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*“Climate smart mindset incorporates climate change analysis into strategic and operational decision-making”*

...as well capital planning, asset planning and anywhere else it makes sense...



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[illegible]

Volume I  
July 2012

**Gate 1**  
Authorize Options Analysis

**Gate 2**  
Approve Business Case

**Gate 3**  
Approval to Advertise

**Gate 4**  
Approval to Award Contract

**Gate 5**  
Approval to Close Project

**Initiation**

**Options Analysis**

**Design**

**Construction**

**Close-Out**

Development

Implementation

LEAD	Specifier	Specifier	Project Mgr	Project Mgr	Project Mgr
APPROVER	Deputy Director, USM, F&A, or CSCO	AMC or LOB AMC	Deputy Director, PDB	Deputy Director, PDB	Deputy Director, FOM

It's important to plan for climate change and rising water and sewage issues that could affect this area.

### Seattle Business Customer



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# Seattle RainWatch

products

verification

about

radar reflect.

instant. precip

1hr pcp

6hr pcp

12hr pcp

24hr pcp

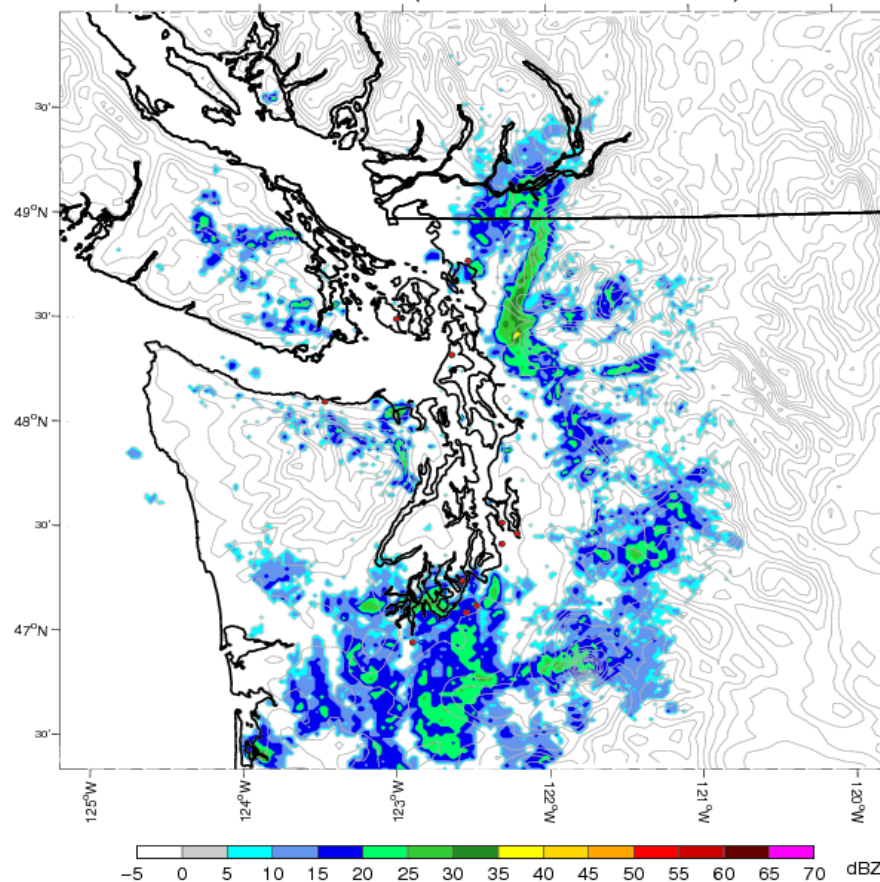
48hr pcp

1hr pcp FCST

radar reflect. FCST

zoom level: full domain | greater metro | local metro

Camano Island Radar (Valid: 2012-Feb-29 3:03 PM Local)



Zoom level:

full domain | greater metro | local metro

Start animation:



Animation Speed:



Faster Slower fps

Time (UTC):

02/29/2012 23:03 UTC

Time (local):

02/29/2012 15:03 PST

Please direct questions and comments to [Jeff Baars](#).

Disclaimer: Certain rainfall data used in analyses on this page have not received final approval and as such are provisional and subject to final revision. The data are released on the condition that neither the University of Washington nor Seattle Public Utilities may be held liable for any damages resulting from their use.

SPU RAINWATCH ALERT:

City-wide 6hr Accumulation rainwatch@atmos.washington.edu  
[rainwatch@atmos.washington.edu]

Sent: Saturday, January 11, 2014 4:46 PM To: [Fleming, Paul](#)

SPU Precipitation Alert:

6-hr precipitation threshold surpassed in city-wide grid

Date : 2014-01-11 16:33

Alert : City-wide 6hr Accumulation

Threshold value : 1.0

Current Max Precip : 1.00

[http://www.atmos.washington.edu/SPU/images/radar\\_images/KATX/maps/pcp6cZ3/  
KATX\\_20140112\\_0033.Z3.lrg.png](http://www.atmos.washington.edu/SPU/images/radar_images/KATX/maps/pcp6cZ3/KATX_20140112_0033.Z3.lrg.png)

Questions or comments: rainwatch@atmos.washington.edu

## SOPA Weather Message

[Rufo\\_Hill, James](#) on behalf of [SPU\\_SOPA](#)

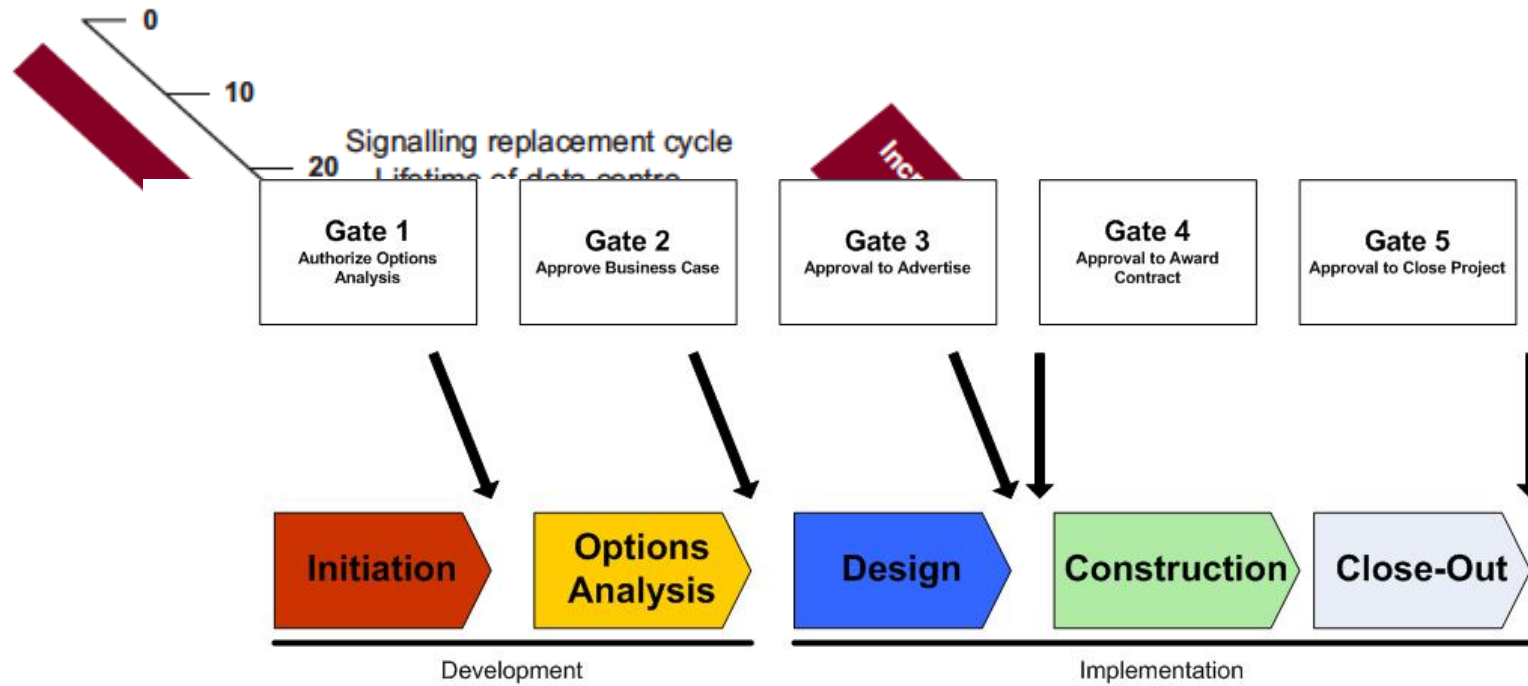
Sent: Wednesday, January 08, 2014 10:11 AM

Our first true storm since late September will arrive on Friday. *The fast-moving atmospheric river is forecasted to provide up to 2" of rainfall* citywide during the 24-hour period ending 4 AM Saturday. Around half of that rainfall is currently expected to fall during a 6-hour period Friday afternoon and evening. The event will also be windy with gusts peaking after the heaviest rainfall has passed on Saturday morning. Periods of mostly light rain will continue through the weekend.

While the event is notable with respect to our relatively dry season thus far, rainfall intensities are not currently expected to reach statistically significant levels. *SOPA is advising only limited pre-storm work, including assessment of any maintenance or construction activities that affect DWW system capacity.* SOPA will continue to monitor closely; [forecast data](#) will update twice daily and users are encouraged to visit the site between messages for the latest information.

*SOPA (System Operations Planning and Analysis) provides weather forecasting services for SPU's Drainage and Wastewater operations.*

## Lifetime of infrastructure with illustrative climate change timescales for the UK



LEAD	Specifier	Specifier	Project Mgr	Project Mgr	Project Mgr
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# conclusions

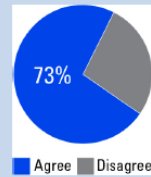
- scientific enterprise is essential
- parallel development of risk framing and management responses
- actionable science
- build sustained capacity
- embed what we learn in what we do

# Thank You

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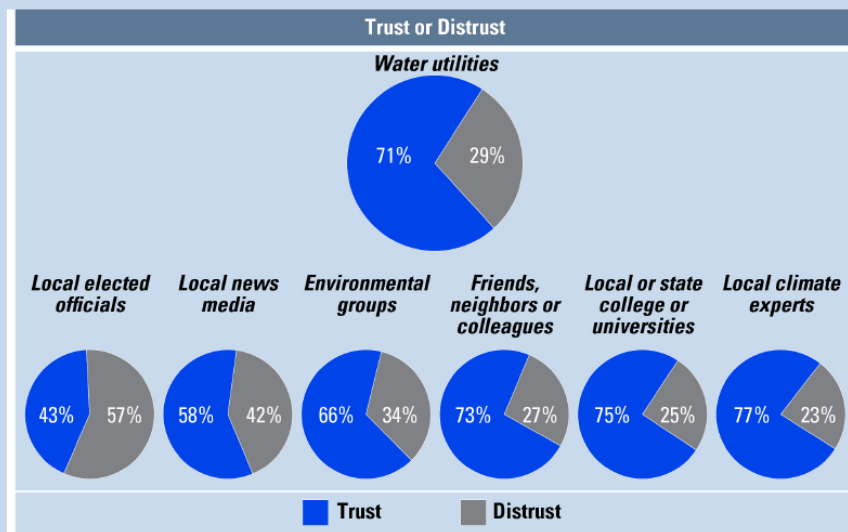


Climate change will have a significant impact on the water cycle.



Source: Stratus Consulting, 2013.

How much do you trust or distrust the following as a source of information about climate change impacts for your local water system?



Source: Stratus Consulting, 2013.

How large of a leadership role should your community water utility play in helping your community prepare for the impacts of climate change?



Source: Stratus Consulting, 2013.



Survey conducted April 10–April 28, 2013  
Funding provided by the Water Research Foundation

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# overview

- science, policy and management
- building adaptive capacity
- ideas for the Forum