



King County, Washington Climate Change Adaptation Efforts

Center for Clean Air Policy
Urban Leaders Adaptation Initiative

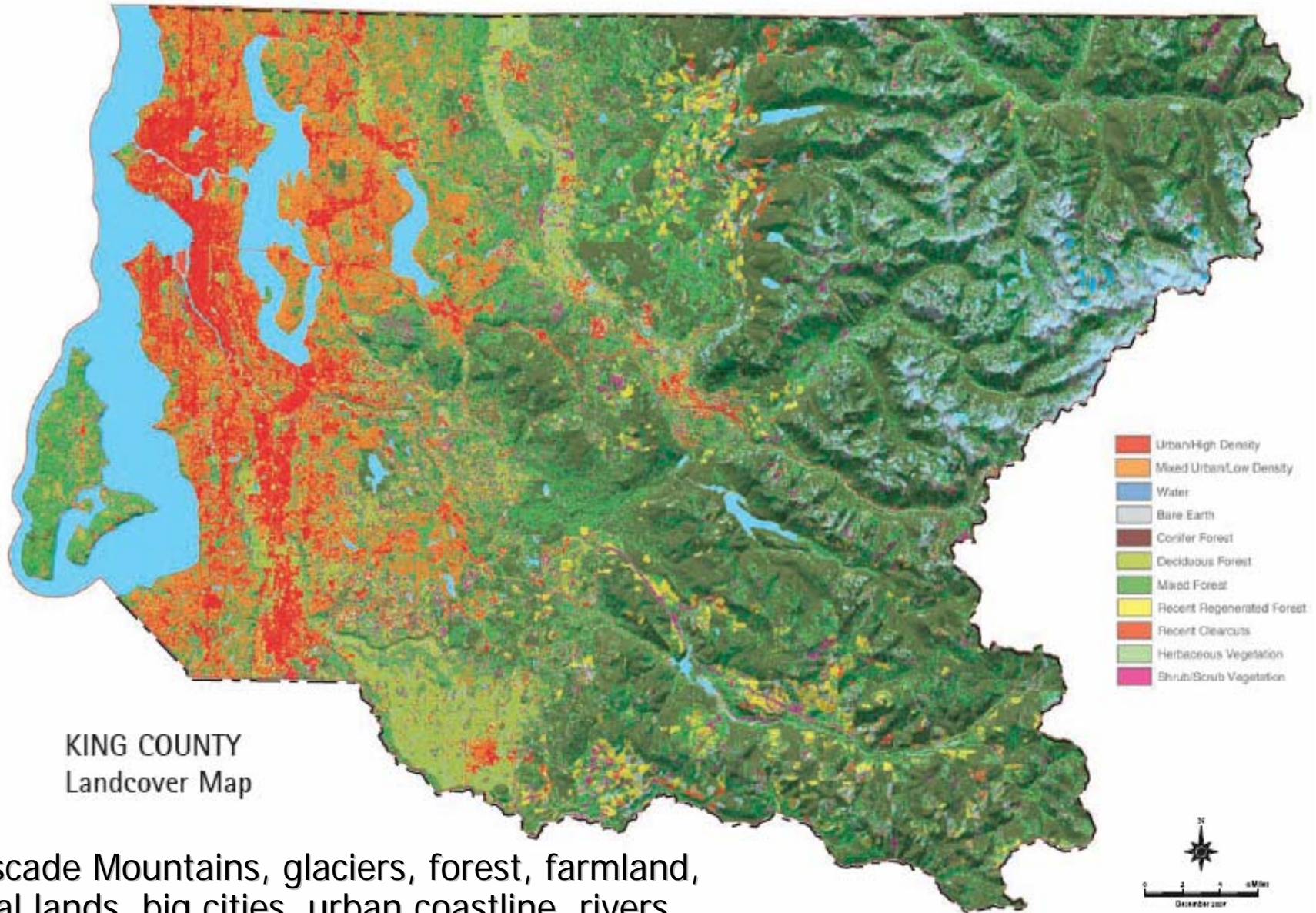
Washington, D.C.

July 22nd, 2009

Matt Kuharic

King County, Washington
Climate Change Response Program Coordinator
Executive Kurt Triplett's Office

Who, Where, What is King County?





Pacific Northwest Impacts of Climate Change

Climate changes in...

- Temperature
- Precipitation
- Storm frequency and intensity



Fire damage in the North
Cascade Mountains

will impact...

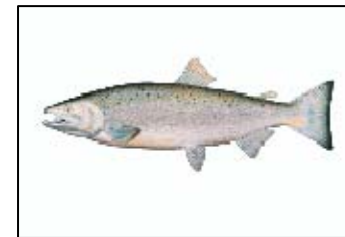
- **Snowpack**
- Streamflow
- Flooding
- Water supply
- Sea level
- Soil water content

and affect...

- Agriculture
- Stormwater
- Wastewater Treatment
- Wildfire risk
- Roads
- Hydropower
- Forest health
- Salmon and biodiversity

with consequences to...

- Public health
- Economic livelihoods
- Financial sector
- Insurance industry
- Individual comfort
- Recreation



A male
Coho
Salmon

Source: Climate Impacts Group,
University of Washington,
www.cses.washington.edu/cig



What is climate change adaptation?

Planning with the understanding that...

- History may no longer be a guide to the future
- We must prepare for change in built, human and natural systems
- We must be smart about what we build and where



“The key is to listen to scientists, not politicians.”

– Former King County Executive Ron Sims,
US News and World Report, June 5, 2006



Like Eating and Drinking

Mitigation

Stabilizing atmospheric concentrations of greenhouse gases by reducing emissions across sectors

Adaptation

Ensuring the resilience of communities to the consequences of inevitable climate change

“In essence, mitigation is our number one preparedness strategy. If we do not stop the growth of eventually reverse greenhouse gas emissions, then our opportunity to adapt will be limited by the rapid pace of climate change.”

Former King County Executive Ron Sims

Assessment; Mitigation; Adaptation; Collaboration



The image shows the cover and table of contents for the 2007 King County Climate Plan. The cover features the King County logo and the title '2007 Climate Plan'. The table of contents lists the following page numbers:

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- *2007 King County Climate Plan*
- *2007 Preparing for Climate Change Guidebook*
- *2008 King County Comprehensive Plan*



How is King County Adaptation Preparation and Planning Going?

- Comprehensive Planning
- Flood Planning
- Reclaimed Water Efforts
- Sea level rise assessment by the Wastewater Treatment Division
- Transportation Infrastructure
- Carbon Sequestration and Ecosystem Resiliency on Public and Private Lands



Brightwater Treatment Plant construction



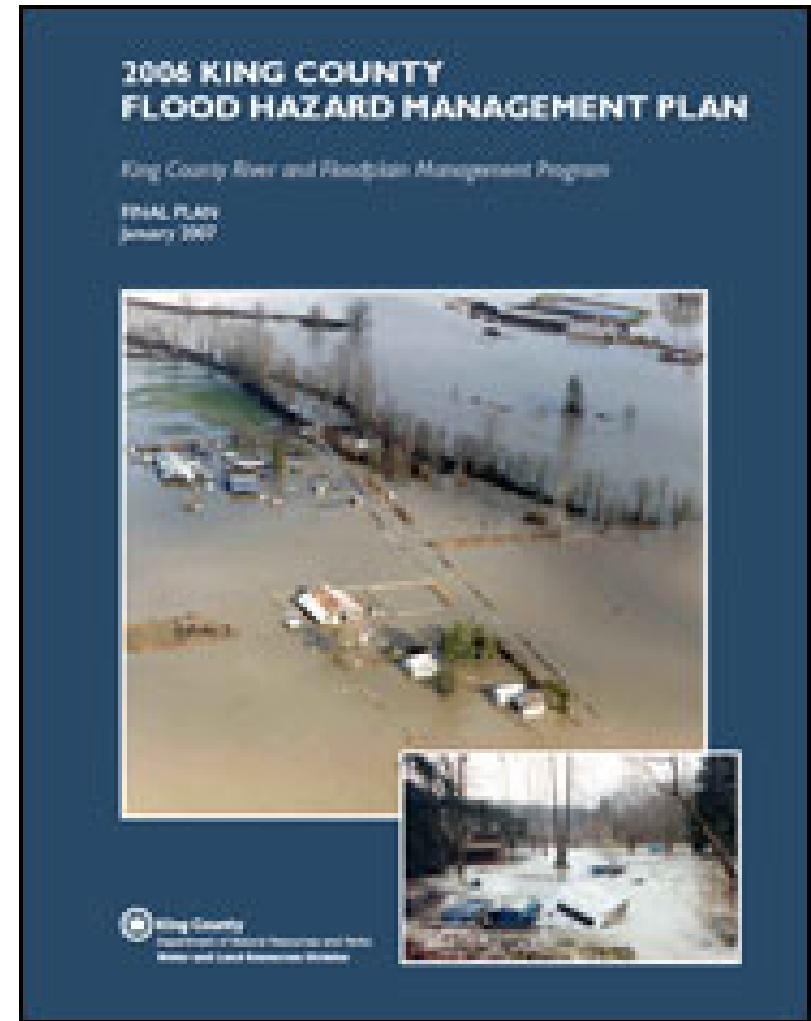
West Point Treatment Plant
Seattle, Washington



Flood Planning and Control

Rather than wait for disaster to loom, Sims argued last week, "Let's make the investments and prevent it." That investment would amount to as much as... \$30 a year on a \$300,000 home. It would seem to be the cheapest insurance a homeowner could buy.

Seattle PI Editorial Board,
July, 2006





Flood Planning and Control

- Up to \$335 million to improve King County's system of 500 levees
- Program does roughly 10X the work it used to do
- Increase river capacity, purchase the most susceptible lands





Reclaimed Water from Wastewater Treatment

- Creating resources from wastewater
 - Continue and improve WTD's existing reclaimed water programs
 - Develop markets for reclaimed water
 - Reclaimed Water Comprehensive Plan Completed
- New Brightwater Treatment Plant has an extensive "reclaimed water backbone"





King County

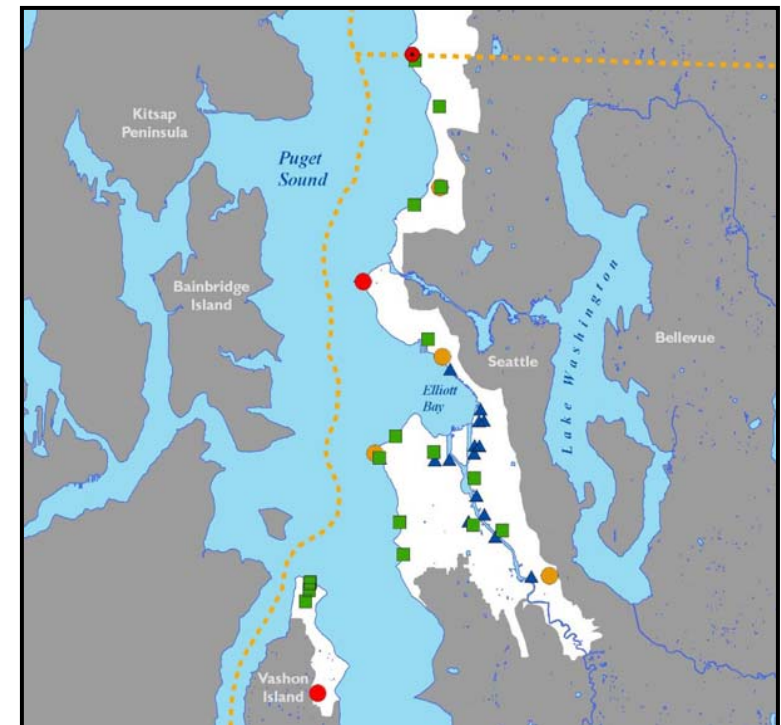
Vulnerability of Wastewater Facilities to Flooding from Sea-Level Rise

Develop and conduct GIS based methodology combining sea level rise projections + storm surge, compared to facility elevations



Recommendations include:

- Raise elevation of Brightwater sampling facility and flow monitor vault sites.
- Raise weir height and install outfall flap gate for Barton Pump Station improvements.
- Conduct terrain analysis of five lowest sites and West Point Treatment Plant.



King County

Transportation Infrastructure



- New \$24 million Tolt Bridge spanning the Snoqualmie River has been built with longer spans than the previous bridge, increasing its capacity to withstand high flows and major flooding events
- More than 57 smaller "short span" bridges are planned to be replaced with wider span structures, allowing debris and floodwater to pass underneath without backing up river levels
- Culverts that will increasingly be at risk of chronic flooding and road failure, and would cause destruction of fish habitat during storm events – will be replaced with larger systems not only to prevent roads from failing, but also to improve fish passage

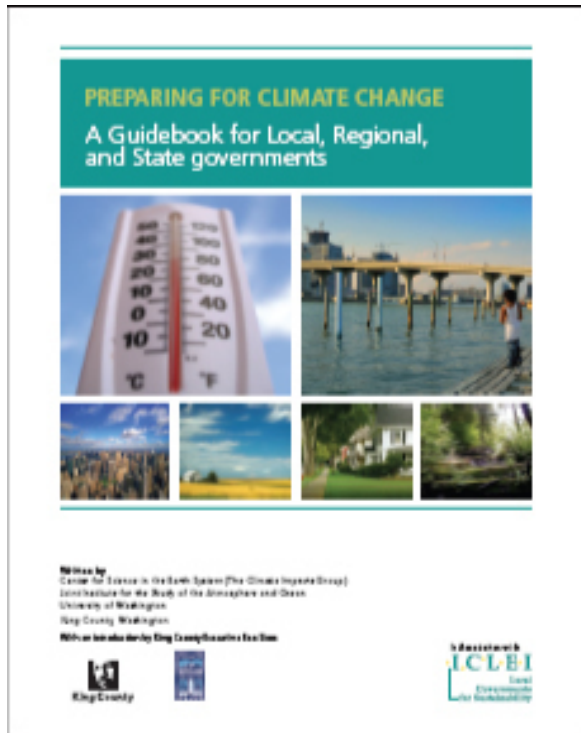




Urban and Community Forestry Climate Response and Preparedness (CPR)

- Opportunities on public and private lands to increase carbon sequestration and improve ecosystem resiliency
- Public Lands: Establishing test plots at the Vashon Island landfill borrow pit
- Private Lands: Document and incorporate the public benefit that climate friendly land management activities provide - create a property tax incentive for citizen action

Adaptation Outreach and Leadership



Preparing for Climate Change Guidebook

- University of Washington Climate Impacts Group
 - King County
- Published by ICLEI - USA
 - Padilla Bay National Estuarine Research Reserve
- Washington State Ecology's Coastal Management Office
- National Oceanic and Atmospheric Administration (NOAA)
 - King County

QuickTime™ and a decompressor are needed to see this picture.



Potential Future King County Adaptation Projects

- incorporation of projected changes in flooding into floodplain mapping
- sea level rise impacts to wastewater *conveyance* system
- incorporation of the temperature and hydrology impacts to the Salmon Recovery Program
- assessment of impacts to waste transportation system
- planning for drought, climate induced insect infestations and invasive species and other impacts on the Forestry Program



Recent Storm Events

January 2009



Snoqualmie Valley Farmland



Hyak Ski Area



Snoqualmie Falls



Downtown Snoqualmie



King County Recommendations

- Inclusion of local governments in federal climate change legislation and programs
- Funding for projects such as King County's efforts
- More preparedness trainings for local governments, according to local climate change impact areas
- A National Climate Service and regional climate centers to provide science that is actionable for public policy and infrastructure decisions



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