

Water Needs and Strategies for a Sustainable Future Next Steps

Climate Change Adaptation Policy Workshop
September 24-26, 2008



Garland Erbele, WSWC Chairman

2006 WGA Water Report

The six major sections

1. Growth and Water Policy
2. Meeting Future Water Demands
3. Water Infrastructure Needs and Strategies
4. Resolution of Indian Water Rights Claims
5. Climate Change Impacts
6. ESA & Protecting Aquatic Species



**Water Needs and Strategies
for a Sustainable Future:
*Next Steps***

Western Governors' Association ♦ June 2008

Water Policy and Growth

- Population growth is continuing at an unprecedented rate in the West with ramifications not only for cities but rural communities and agricultural areas.
- In the future, we may not be able to sustain unlimited growth and still maintain our current quality of life. Difficult political choices will be necessary....

Water Policy and Growth

- Decisions about where and how to grow are rarely influenced by the water policy or the availability of water.
- Foster Sustainable Growth Policies
 - Identify present/future water requirements
 - Develop integrated growth impact scenarios
 - Present scenarios to local decision makers
 - Include consideration of climate uncertainties

Water Policy and Growth

- Federal agencies' planning should consider state and local plans and be consistent
- State efforts should not preempt local prerogatives, but guide and assist
- Identify feasible alternatives to water transfers from agriculture to other uses
- Applications for new water use, water right transfers, etc. should consider local, tribal and watershed group plans and climate change

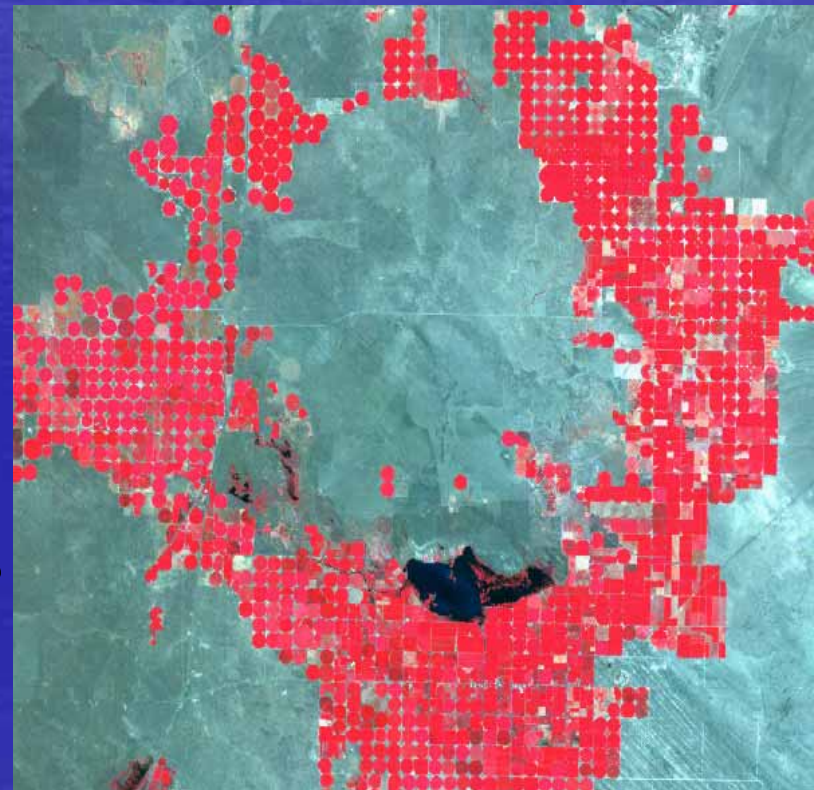


Water Policy and Growth

- Climate change and variability
- General lack of data on water needs and past, present and future uses
- Endangered species' and other instream uses and outflows to bays and estuaries
- Increasing energy needs
- Unquantified Native American water rights

Priority Water Information Needs

- Available Surface and Ground Water Supplies
- Present Water Uses
- Snowpack (NRCS)
- Streamflow (USGS)
- Evapotranspiration (NASA Landsat 8)
- Climate Change Impacts & Adaptation



Priority Water Information Needs

- Gather and disseminate real-time data
- Increase support and funding for data
- Identify data gaps and ways to close gaps
- Foster remote sensing capabilities
- Reduce costs through technology
- Increase in-kind contributions from existing cooperators
- Find new sources of funding

Strategies to Meet Water Needs

- Develop and Implement a National Integrated Drought Information System (NIDIS)
- Create a National Climate Service within the National Oceanic and Atmospheric Administration (NOAA)
- Enact broader national drought policy, emergency preparedness & climate adaptation legislation

Strategies to Meet Water Needs

- Utilize university research programs
- Promote applied research with state funds
- New programs and technologies
 - water supplies and uses
 - remote sensing
 - wastewater treatment
 - energy and water nexus
 - water use efficiency and conservation
 - efficient and cost effective project operations

Strategies to Meet Water Needs

- Ensure adequate supplies are available
- Promote Integrated Resources Management
- Augment existing water supplies
 - water conservation
 - water use efficiency
 - demand management (pricing structures)
 - water rights transfers
 - water markets
 - water banking
 - water reuse
 - watershed protection and management
 - new surface and ground water storage
 - desalination
 - weather modification
 - rotated fallowing of agricultural lands

Strategies to Meet Water Needs

- "Before new water supply projects are built, opportunities to conserve water in ways that will stretch existing supplies will be fully examined, and to the extent practical, implemented."
- Water conservation is a means to an end and not an end in and of itself

Water Infrastructure Needs

“Much of our infrastructure is inadequate due to population growth, water quality requirements and safety threats....”

“Underfunding needed capital improvements is a chronic problem....”

“More water storage should be considered....”

“More data is needed to evaluate risks related to climate change...” and possible operational changes, structural modifications, as well as reallocation of storage.



Climate Change Impacts

- Global surface temperatures are increasing
- Hydrologic impacts include:
 - smaller coastal/mid-elevation snowpacks
 - earlier snowmelt and runoff
 - changing flood-control releases
 - more extreme flood events
 - receding glaciers and rising sea levels
 - extreme drought and more evapotranspiration
 - less ground water recharge

Climate Change Impacts

- Economic/Environmental Impacts
 - greater drought losses
 - more wildfires
 - water quality challenges
 - less hydroelectric generation
 - water-borne shipping impacts
 - ecosystems impacts
 - recreation impacts



Climate Change Adaptation

- Focus on vulnerabilities and building increased resiliency to climatic extremes.

1st Data Collection

- Expand Funding for snow surveys, streamgaging, and remote sensing of evapotranspiration (ET)

2nd Improved Climate Prediction & Modeling

- Urge Congress to fund more research
- Need for scaling models to regional and local level

3rd Impact Assessment

- Water supplies and demands

Climate Change Adaptation

State Planning

1. Assess projected climate impacts and trends
 - Inventory data sources
 - Seek funding to support activities
2. Maintain various water-related plans
 - Include climate change scenarios
3. Include local government in planning efforts
4. Ensure flexibility to respond to climate change/variability and extreme weather events

Climate Change Adaptation

Need for more –

- Watershed scaled climate model outputs
- Applied science to support decisionmaking
- National and regional impact assessments
- Agreed upon data standards and protocols
- An internet portal for public/decisionmakers
- Better, more robust forecasting models
- Better understanding of climate drivers
- Federal climate change adaptation legislation

Garland Erbele, Chairman
Western States Water Council
801-561-5300



Chief Engineer
South Dakota Water Rights Program
Dept. of Environment & Natural Resources

garland.erbele@state.sd.us