WATER IN THE 21ST CENTURY

ROBERT W JOHNSON
SENIOR CONSULTANT HDR ENGINEERING
SENIOR ADVISOR WATER STRATEGIES
EXECUTIVE VICE PRESIDENT NWRA
THE PROBLEM

- INCREASING DEMAND
  - Environmental Needs
  - Energy Nexus
  - Native American Reserved Water Rights
  - Population Growth
THE PROBLEM

- DECLINING SUPPLIES
  - Drought
  - Climate Change
HOW STATES WILL BE AFFECTED BY CLIMATE CHANGE
THE PROBLEM

- LEGAL AND INSTITUTIONAL
  - Prior Appropriation
  - State/Regional Differences
TOOLS FOR A SOLUTION

- CONSERVATION AND REUSE
  - In Basin Problem

- WATER MARKETS
  - Legal & Institutional
  - Rural Economies
  - Agriculture Important
  - In Basin Problem
TOOLS FOR A SOLUTION

- HABITAT CONVERSATION PLANS

- DESALINATION
  - Exp/Env

STORAGE
  - Exp/Env

AUGMENTATION
  - Exp/Env/L&I

CHANGE LEGAL AND INSTITUTIONAL
  Helps in Implementing Other Tools
  Very Difficult/Paradigm Shift
EXAMPLES

RIO GRANDE

- TEXAS
- SACRAMENTO/SAN JOAQUIN DELTA
- PLATTE RIVER
- YAKIMA RIVER
- COLUMBIA RIVER
- ACT AND ACF RIVER BASINS
EXAMPLES

- COLORADO RIVER – CC/DROUGHT/ENV
  - C&R/WM/AUG/L&I/DESAL/HCP

- RIO GRANDE – CC/DROUGHT/ENV
  - C&R/WM/AUG/HCP/DESAL

- TEXAS – CC/DROUGHT/ENV
  - C&R/WM/DESAL/AUG/HCP/STORAGE/L&I

- SACRAMENTO/SAN JOAQUIN – ALL
  - C&R/STORAGE/HCP/L&I/DESAL/WM

- MISSOURI/PLATTE RIVERS – ENV/L&I
  - HCP/L&I/INFRASTRUCTURE
EXAMPLES

- COLUMBIA STSTEM – ENV/OTHER
  - HCP/INFRASTRUCTURE

- ACT/ACF RIVER SYSTEMS – L&I/DROUGHT/CC/ENV
  - L&I/STORAGE

- GREAT BASIN – ALL
  - C&R/WM/HCP

- AUSTRALIA – DROUGHT/CC/ENV
  - C&R/WM/L&I
OBSERVATIONS

- SOLUTIONS TAKE TIME
- NECESSITY IS THE MOTHER OF INVENTION
- RELATIONSHIPS ARE IMPORTANT
- NO COOKIE CUTTERS
- LEADERSHIP IS CRITICAL
THANK YOU