

The Water Energy Nexus Emerging Risk? or Opportunity?



Dr. David Green

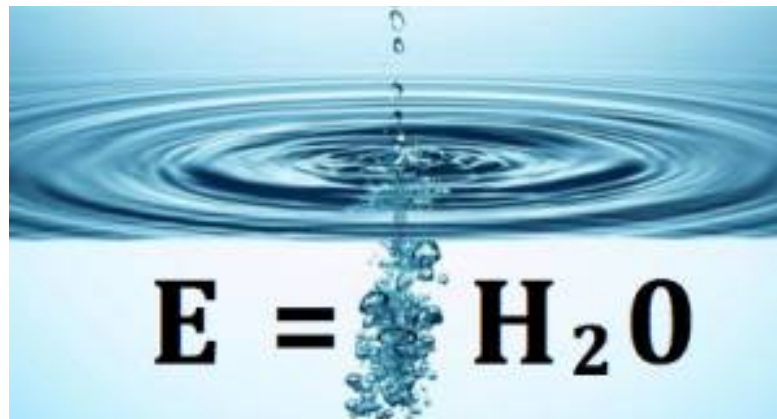
NOAA National Weather Service

AMS Forum April 10, 2014

The Issue

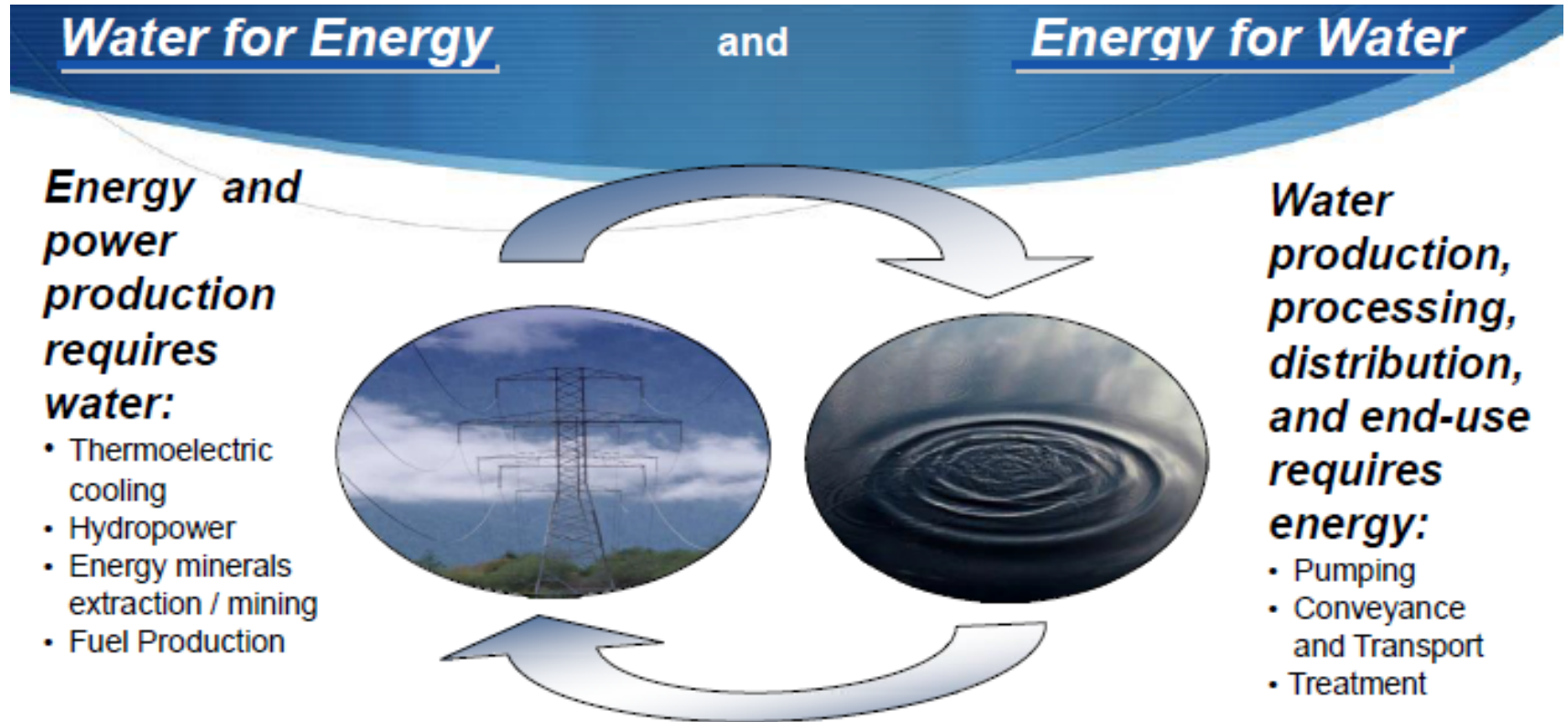
“The competition between water and energy needs represents a critical business, security, and environmental issue, but has not yet received the attention that it merits...”

(World Policy Institute and EBG Capital, March 2011)



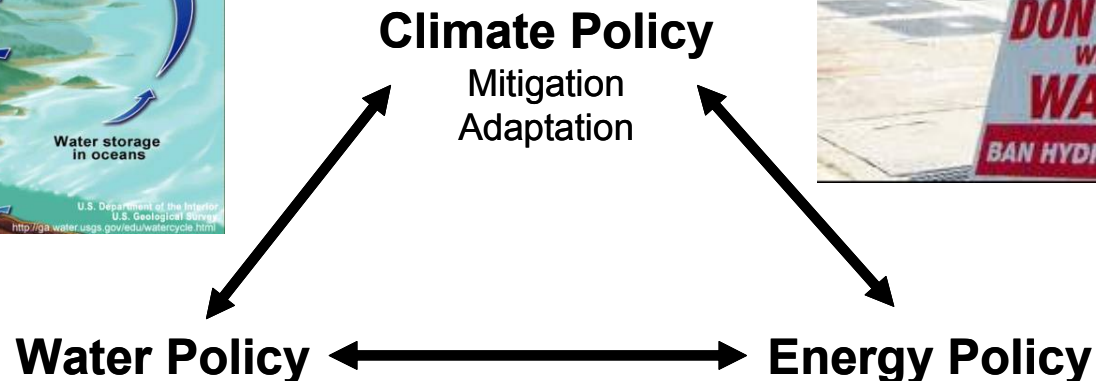
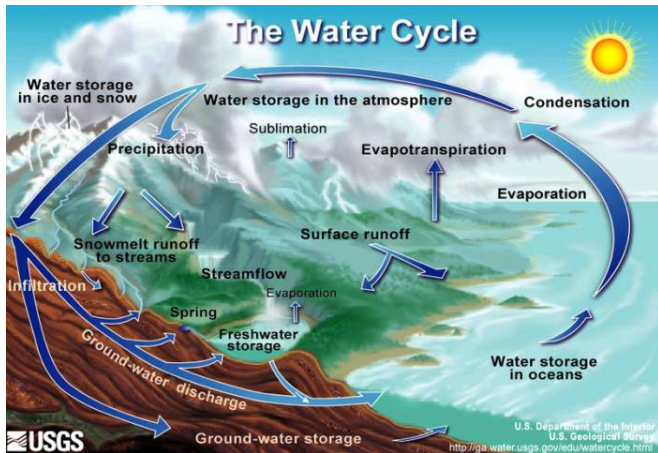
Energy and Water are Inextricably Linked

Energy production consumes significant amounts of water; providing water, in turn, consumes energy.



The Growing Energy Thirst

In a world where water scarcity is a major and growing challenge, meeting future energy needs depends on water availability –and meeting water needs depends on wise energy policy decisions.”



Opportunities for the Weather Enterprise

- **Develop improved water availability estimates**
 - for energy development
- **Improve monitoring**
 - for efficient daily operations and water-withdrawal operations
- **Enhance climate and river forecasts**
 - for operational planning
- **Enable water resource managers and regulators**
 - to provide water resources needed to support a national energy industry and the U.S. economy

Opportunities for the Weather Enterprise

- **Improve modeling and synthesis**
 - to produce a new, comprehensive and consistent suite of high-resolution water resources analyses and prediction information needed for decision making
- **Provide better estimates and forecasts**
 - such as temperature and water availability, to help the energy industry better design (and not over design) for future needs
- **Strengthen national capacity to manage and respond**
 - to droughts, floods, and other water supply risks impacting energy production and to ensure energy security as climate varies and changes.

National Water Center

- State-of-the-science water analysis, forecast information and decision support services to address the Nation's growing water resource challenges
- Where collaboration and partnerships can support positive outcomes
 - **Energy, health, navigation recreating, infrastructure and food**



Background

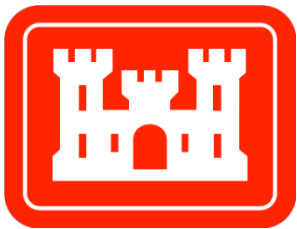
National Water Center

- **Planned capabilities:**
 - Data Services
 - Observations, model output, forecasts and warnings
 - Data Archive
 - National modeling and forecast guidance
 - Proving Ground (R2O and O2R acceleration)
 - Verification/Validation
 - Service Backup or River Forecast Centers
- Partnerships – NOAA, USGS, FEMA, USACE?, ... others

Integrated Water Resources Science & Services

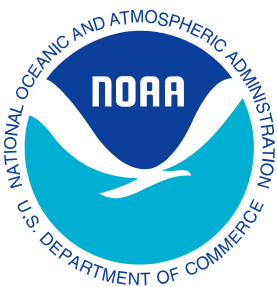


- **Water Science** - to collect and disseminate reliable, impartial, and timely information needed to understand the Nation's water resources in order to minimize loss of life and property from natural disasters



**US Army Corps
of Engineers**

- **Water Management** - to strengthen our Nation's security, energize the economy, and reduce risks from disasters
- **Water Prediction** - to provide weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy



**IWRSS Partnership
will expand over time**

