

U.S. DEPARTMENT OF  
**ENERGY**

Office of  
ENERGY EFFICIENCY &  
RENEWABLE ENERGY

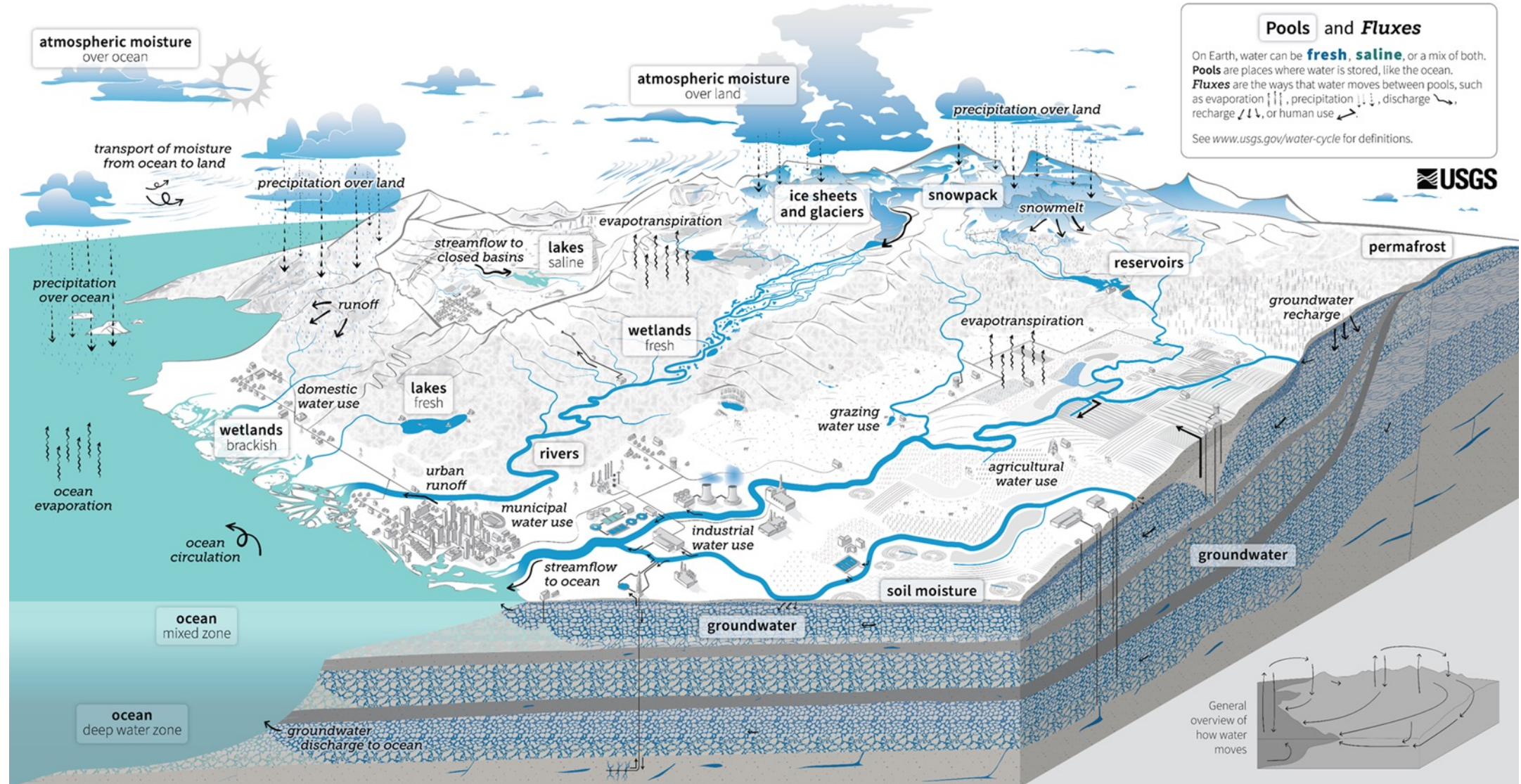
# Four Corners Energy & Water Innovation Student Symposium

Afternoon Panel Discussion – Moderator: Mike Rinker – Senior Technical Advisor at DOE EERE

April 6, 2023



# Framing of the Energy Water Nexus



# How is Energy and Water interdependent?

**WATER & ENERGY**

Water and energy systems are interdependent.

Water is used in all phases of energy production. Energy is required to extract, pump and deliver water for use by humans, and to treat wastewater so it can be safely returned to the environment.

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**How we use water for energy**

**Electricity Generation**  
Nearly half of all water withdrawn in the U.S. keeps power plants cool enough to function safely & efficiently.

**Oil & Gas**  
Water is used for hydraulic fracturing, enhanced oil recovery and other fossil fuel production processes.

**Renewables**  
Essential for hydropower; water is also used for concentrated solar power, for geothermal energy and to produce bioenergy.

**How we use energy for water**

**Pumping**  
We use energy to pump water from aquifers for agriculture and to transport to treatment facilities and consumers.

**Water Treatment**  
Energy is needed to desalinate water and treat wastewater before it's returned to the environment.

**Heating & Cooling**  
Energy and water work together to keep buildings and equipment at safe, comfortable temperatures.

**Delivery**  
We use energy to distribute and heat water for cooking, showering, cleaning and drinking.

Water is needed for energy and energy is needed for water.

Water for Energy → energy resource development

- Extraction
- Processing
- power generation

Energy for Water → water resource development

- Processing
- Treatment
- Distribution

# Panel Session – Regional Perspectives and Remarks

## Opportunities and Challenges

- Regional hydrogen economy
- Role of produced water in regional energy production
- Critical minerals and mining
- Regional ground and surface water availability
- Education and workforce opportunities
- Cross-cutting priorities for tribal communities

## Our Panelists

- Mr. John Bryom, PESCO, Inc.
- Mr. Mike Hightower, NM Produced Water Consortium
- Dr. Tanya Gallegos, US Geological Survey (USGS)
- Dr. John Leeper, WSP, Inc.
- Dr. Lorenzo Reyes, San Juan College
- Dr. Crystal Tulley-Cordova, Navajo Nation

## Logistics of our session today

- Introduction/Flash Talks
- Series of Questions
  - Moderator will initiate questions
  - Students and participants – *We want your questions as well*