The Nexus of Energy & Water: Policy Context

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There Are Four Main Points to Remember

1. Energy and water are interrelated
   • We use energy for water and water for energy

2. The energy and water relationship is already under strain
   • Strain introduces cross-sectoral vulnerabilities

3. Trends imply these strains will be exacerbated
   • Population growth increases total demand
   • Economic growth increases per capita demand
   • Global climate change intensifies the hydrological cycle
   • Policy shifts towards increasing water-intensity of energy and energy-intensity of water

4. There are different policy actions that can help
   • Federal engagement on energy/water nexus is warranted
There is Some Recent Policy Attention to the Energy-Water Nexus

- **U.S. Congress:**
  - Energy and Water Research Integration Act of 2009
    - Calls for studies and assessments of the energy-water nexus
  - American Clean Energy and Security Act of 2009 (ACES)
    - Call for changes to the energy mix with implications for water use

- **Texas:** Legislature developed a bill that considered water part of permitting process for power plants
There Are Policy Pitfalls At The Energy-Water Nexus
Energy and Water Policymaking Are Disaggregated

• Funding and oversight mechanisms are separate
  – Energy planners assume they have the water they need
  – Water planners assume they have the energy they need

• Multitude of agencies, committees, etc. w/o clear authority

• Hierarchy of policymaking is dissimilar
  
  **Energy**: top-down
  • powerful federal energy agencies

  **Water**: bottom-up
  • powerful local water agencies
Water Data Are Sparse, Error-prone, and Inconsistent

- USGS data-collection is infrequent
  - last survey on water consumption: 1995

- Errors in national databases (Egrid, etc.)
  - differences between state and federal reporting
  - different units
    - *East*: gallons
    - *West*: acre-feet
  - unclear definitions:
    - use vs. withdrawal vs. consumption vs. diversion
There Are Policy Opportunities At The Energy-Water Nexus
Water Conservation and Energy Conservation Are Synonymous

• Policies that promote water conservation also achieve energy conservation

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There Are Energy/Water Policy Tools Available

• Collect, maintain and make available accurate, updated and comprehensive water data
  – EIA for energy data, USGS for water data?

• Conduct integrated policymaking
  – Administration (CEQ?)
  – Congress (S&T? Energy & Natural Resources?)

• Establish federal role for water quantity
  – EPA is in charge of water quality

• Establish strict federal standards in building codes for water efficiency
  – purple piping, rain barrels, low-flow appliances
There Are Energy/Water Policy Tools Available

- Invest heavily in water-related R&D to match increases in energy-related R&D
  - low-energy water treatment, desalination, etc

- Work closely with USDA to develop and implement drip irrigation systems

- Focus DoE’s bioenergy R&D on biofuels feedstocks that do not require freshwater irrigation (e.g. algae)

- Match water permitting with air permitting for power plants
There Are Energy/Water Policy Tools Available

• Support reclaimed water use at powerplants, industry and agriculture

• Fund R&D for dry cooling systems at powerplants
  – Buy water rights to swap out cooling systems
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