

# Integrating engineering, economics and finance to manage the risks of hydrologic variability

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215 Armsby



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Population growth and economic development continue to drive increasing demand for water, while the costs and regulatory hurdles associated with developing new supplies have risen substantially. A growing number of regions therefore face serious water resource challenges, and improved strategies for managing existing water resources and developing new supplies will be required if society is to reliably meet demand in a manner that is cost effective and environmentally sustainable. More sophisticated planning approaches can benefit from models that couple both the hydrologic and economic elements of water resource systems, while also incorporating consideration of engineering and financial principles.

**In this talk, creative strategies for meeting urban water demand in both western and eastern regions of the country will be described, with due consideration to the different regulatory and institutional realities prevailing in each.** These strategies involve more sophisticated approaches for allocating existing resources, particularly during drought, and the integration of these approaches with new infrastructure development. Implicit within these more complex strategies is the higher level of financial risk inherent when using conservation (ie. lower revenues) and transfers (ie. higher costs) to manage drought. The financial disruptions that occur can make these strategies less attractive to cities and/or utilities, but risk management techniques, including the use of financial instruments, can provide a means of mitigating financial instability and open the door to broader implementation.



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