

The Energy/Water Nexus: A Case Study of the Arkansas River Basin
Project Abstract
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Water is essential to sustain agriculture, municipalities, industrial operations, and many forms of electricity generation. In many regions of the country, freshwater use – from both surface and groundwater sources – is unsustainable. As cities and electricity needs grow, finite water resources will become more stressed; increased ethanol production and climate change may exacerbate these stresses.

Using the Arkansas River Basin in Colorado and Western Kansas as a case study, we assess future water demands under several different development scenarios. Under a “business as usual” trajectory, water demands for electricity generation and municipalities are likely to increase. However, agricultural irrigation needs, driven by the ethanol boom and high crop values, represent the most substantial potential impact on basin-wide water resources. Our alternate scenarios illustrate the water savings available from investing in municipal water use efficiency, energy efficiency, renewable sources of energy, and sustainable agricultural practices. Clearly, decisions about future electricity generation, municipal growth, and agriculture will have important consequences for basin-wide water resources. These impacts should be considered in long-range planning.