

Water Requirements for Texas Shale Gas Industry: Will We Meet Projected Needs?

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Unconventional gas production from gas shales in Texas has expanded from the original play of the Barnett Shale in North Texas to include many other promising formations such as Haynesville, Woodford, and Pearsall-Eagle Ford shales and other tight formation such as the Bossier Sand. These and similar plays are likely to be developed at a rate steeper than that of the Barnett Shale. More than 12,000 wells have been completed in the Barnett during the past decade. Many more wells are likely to be drilled in the next couple of decades as the play keeps expanding out of its core area despite the recent gas price slump. However, well completion requires the use of the water-intensive so-called "frac jobs" needed to create pathways to produce gas from the very low permeability shales. A typical vertical and horizontal well completion in the Barnett Shale consumes approximately 1.2 and 3.0 to 3.5 millions gallons of fresh water, respectively. Applying similar water consumption rates across the state could raise some concerns among local communities and other surface water and groundwater stakeholders and could eventually limit the development of the plays. Some of these formations are located in the water-poor western half of the State. Others, despite benefiting from a more humid climate, are also co-located with or in close- proximity to large population centers with large water needs. We present an analysis of future water use by the Texas gas industry and compare it to projections of total water use, including municipal use and irrigation.