Padowski, Julie and James Jawitz, *Water Availability and Vulnerability of 225 Large Cities in the United States*, Water Resources Research, Vol. 48, 2012.

http://onlinelibrary.wiley.com/doi/10.1029/2012WR012335/pdf

This study presents a quantitative national assessment of urban water availability and vulnerability for 225 U.S. cities with population greater than 100,000. Here, the urban assessments account for not only renewable water flows, but also the extracted, imported, and stored water that urban systems access through constructed infrastructure. These sources represent important hydraulic components of the urban water supply, yet are typically excluded from water scarcity assessments.

Results from this hydraulic-based assessment were compared to those obtained using a more conventional method that estimates scarcity solely based on local renewable flows. The inclusion of hydraulic components increased the mean availability to cities, leading to a significantly lower portion of the total U.S. population considered ‘‘at risk’’ for water scarcity (17%) than that obtained from the runoff method (47%). Water vulnerability was determined based on low-flow conditions, and smaller differences were found for this metric between at-risk populations using the runoff (66%) and hydraulic-based (54%) methods.

The large increase in the susceptible population between the scarcity measures evaluated using the hydraulic method may better reconcile the seeming contradiction in the United States between perceptions of natural water abundance and widespread water scarcity. Additionally, urban vulnerability measures developed here were validated using a media text analysis. Vulnerability assessments that included hydraulic components were found to correlate with the frequency of urban water scarcity reports in the popular press while runoff-based measures showed no significant correlation, suggesting that hydraulic-based assessments provide better context for understanding the nature and severity of urban water scarcity issues.